USEPA CONTRACT LABORATORY PROGRAM

STATEMENT OF WORK

FOR

ANALYSIS OF
LOW CONCENTRATION ORGANIC

OLC03.2
December 2000

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STATEMENT OF WORK

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Exhibit A - Summary of Requirements

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1.0 PURPOSE

The purpose of the Low Concentration (Water) Organic analytical service is to provide analytical data for use by the U.S. Environmental Protection Agency (USEPA) in support of the investigation and clean-up activities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). Other USEPA Program Offices that have similar analytical data needs also use this service.

2.0 DESCRIPTION OF SERVICE

The organic analytical service provides a contractual framework for laboratories to apply USEPA Contract Laboratory Program (CLP) analytical methods for the isolation, detection, and quantitative measurement of 50 volatile, 65 semivolatile, and 28 pesticide/Aroclor target compounds in water samples. The analytical service provides the methods to be used and the specific contractual requirements by which USEPA will evaluate the data. This service uses Gas Chromatography/Mass Spectrometry (GC/MS) and Gas Chromatography/Electron Capture Detector (GC/ECD) methods to analyze the target compounds.

3.0 DATA USES

This analytical service provides data which USEPA uses for a variety of purposes such as: determining the nature and extent of contamination at a hazardous waste site; assessing priorities for response based on risks to human health and the environment; determining appropriate clean-up actions; and determining when remedial actions are complete. The data may be used in all stages in the investigation of hazardous waste sites, including: site inspections; Hazard Ranking System (HRS) scoring; remedial investigation/feasibility studies; remedial design; treatability studies; and removal actions. In addition, this service provides data that are available for use in Superfund enforcement/ litigation activities.

4.0 SUMMARY OF REQUIREMENTS

4.1 Introduction to the Organic Low Concentration Statement of Work

This Statement of Work (SOW) is designed as part of the documentation for a contract between USEPA and a commercial laboratory performing analyses in support of USEPA Superfund programs. The SOW is comprised of eight exhibits. Exhibit A provides an overview of the SOW and its general requirements. Exhibit B contains a description of the reporting and deliverables requirements, in addition to the data reporting forms and instructions. Exhibit C specifies the Organic Target Compound list for this SOW with the contract required quantitation limits for the sample matrix. Exhibit D details the required analytical procedures to be used with this SOW and resulting contracts. Exhibit E provides descriptions of required Quality Assurance/Quality Control (QA/QC), Standard Operating Procedures (SOPs), QA/QC performance, and the reporting of data. Exhibit F contains Chain-of-Custody and sample documentation requirements which the Contractor shall follow. To ensure proper understanding of the terms utilized in this SOW, a glossary can

be found in Exhibit G. When a term is used in the text without explanation, the glossary meaning shall be applicable. Specifications for reporting data in computer-readable format appear in Exhibit H.

4.2 Overview of Major Task Areas

For each sample, the Contractor shall perform the tasks described in each section. Specific requirements for each task are detailed in the exhibits referenced.

4.2.1 Task I: Sample Receiving, Storage, and Disposal

4.2.1.1 Chain-of-Custody

The Contractor shall receive and maintain samples under proper Chain-of-Custody. All associated document control and inventory procedures shall be developed and followed. Documentation described herein shall be required to show that all procedures are strictly followed. This documentation shall be reported as the Complete Sample Delivery Group File (CSF) (Exhibit B). The Contractor shall establish and use appropriate procedures to handle confidential information received from USEPA.

4.2.1.2 Sample Scheduling/Shipments

Sample shipments to the Contractor's facility will be scheduled and coordinated by the Contract Laboratory Program (CLP) Sample Management Office (SMO). The Contractor shall communicate with SMO personnel by telephone, as necessary throughout the process of sample scheduling, shipment, analysis, and data reporting, to ensure that samples are properly processed.

4.2.1.2.1 Samples will be shipped routinely to the Contractor through an overnight delivery service. However, as necessary, the Contractor shall be responsible for any handling or processing of the receipt of sample shipments. This includes the pick-up of samples at the nearest servicing airport, bus station, or other carrier within the Contractor's geographical area. The Contractor shall be available to receive sample shipments at any time the delivery service is operating, including Saturdays.

4.2.1.2.2 If there are problems with the samples (e.g., mixed media, containers broken or leaking) or sample documentation and paperwork [e.g., Traffic Reports (TRs) not with shipment, sample and TR do not correspond], the Contractor shall immediately contact SMO for resolution. The Contractor shall immediately notify SMO regarding any problems and laboratory conditions that affect the timeliness of analyses and data reporting. In particular, the Contractor shall immediately notify SMO personnel in advance regarding sample data that will be delivered late and shall specify the estimated delivery date.

4.2.1.2.3 To monitor the temperature of the sample shipping cooler more effectively, each USEPA Regional Office may include a sample shipping cooler temperature blank with each cooler shipped. The temperature blank will be clearly labeled: USEPA COOLER TEMPERATURE INDICATOR. The Contractor shall record the presence or absence of the cooler temperature indicator bottle on Form DC-1, Item 9.

4.2.1.2.3.1 When the USEPA Regional Office supplies a cooler temperature indicator bottle in the sample shipping cooler, the Contractor shall use the USEPA supplied cooler temperature indicator bottle to determine the cooler temperature. The temperature of the cooler shall be measured at the time of sample receipt by the Contractor.

4.2.1.2.3.2 The temperature of the sample shipping cooler shall be measured and recorded immediately upon opening the cooler, and prior to unpacking the samples or removing the packing material.

4.2.1.2.3.3 To determine the temperature of the cooler, the Contractor shall locate the cooler temperature indicator bottle in the sample shipping cooler, remove the cap, and insert a calibrated thermometer into the cooler temperature indicator bottle. Prior to recording the temperature, the Contractor shall allow a minimum of 3 minutes, but not greater than 5 minutes, for the thermometer to equilibrate with the liquid in the bottle. At a minimum, the calibrated thermometer (±1°C) shall have a measurable range of 0-50°C. Other devices which can measure temperature may be used if they can be calibrated to ±1°C and have a range of 0-50°C. If a temperature indicator bottle is not present in the cooler, an alternative means of determining cooler temperature shall be used. Under no circumstances shall a thermometer or any other device be inserted into a sample bottle for the purpose of determining cooler temperature. The Contractor shall contact SMO and inform them that a temperature indicator bottle was not present in the cooler. The Contractor shall document the alternative technique used to determine cooler temperature in the Sample Delivery Group (SDG) Narrative.

4.2.1.2.3.4 If the temperature of the sample shipping cooler's temperature indicator exceeds 10°C, the Contractor shall contact SMO and inform them of the temperature deviation. SMO will contact the Region from which the samples were shipped for instruction on how to proceed. The Region will either require that no sample analysis(es) be performed or that the Contractor proceed with the analysis(es). SMO will in turn notify the Contractor of the Region's decision. The Contractor shall document the Region's decision and the EPA sample numbers of all samples for which temperatures exceeded 10°C in the SDG Narrative.

4.2.1.2.3.5 The Contractor shall record the temperature of the cooler on Form DC-1, under Item 10 - Cooler Temperature, and in the SDG Narrative.

4.2.1.2.4 The Contractor shall accept all samples scheduled by SMO, provided that the total number of samples received in any calendar month does not exceed the monthly limitation expressed in the contract. Should the Contractor elect to accept additional samples, the Contractor shall remain bound by all contract requirements for analysis of those samples accepted.

4.2.1.2.5 The Contractor is required to retain unused sample volume and partially used sample volume in original sample containers for a period of 60 days after data submission. From time of receipt until analysis, the Contractor shall maintain all water (preserved and unpreserved) samples at 4°C (±2°C).

4.2.1.2.6 The Contractor shall be required to routinely return sample shipping containers (e.g., coolers) to the appropriate sampling office within 14 calendar days following shipment receipt (see clause titled, "Government Furnished Supplies and Materials").

4.2.1.3 Modified Analysis

The Contractor may be requested by USEPA to perform modified analyses. These modifications will be within the scope of this SOW and may include, but are not limited to, analysis of additional analytes and/or lower quantitation limits. These requests will be made by the USEPA Regional CLP Project Officer (CLP PO), USEPA OERR Analytical Operations/Data Quality Center (AOC) Organic Program Manager, and Contracting Officer (CO) in writing, prior to sample scheduling. If the Contractor voluntarily elects to perform these modified analyses, these analyses will be performed with no increase in per sample price. All contract requirements specified in the SOW/Specifications will remain in effect unless the USEPA CO provides written approval for the modification(s) and a waiver for associated defects. The USEPA CO approval must be obtained prior to sample scheduling.

4.2.2 Task II: Sample Preparation and Analysis

4.2.2.1 0verview

The Contractor is advised that the samples received under this contract are usually from known or suspected hazardous waste sites and may contain high (greater than 15 percent) levels of organic and inorganic materials of a potentially hazardous nature and of unknown structure and concentration, and should be handled throughout the analysis with appropriate caution. It is the Contractor's responsibility to take all necessary measures to ensure laboratory safety.

4.2.2.2 Sample analyses will be scheduled by groups of samples, each defined as a Case and identified by a unique USEPA Case number assigned by SMO. A Case signifies a group of samples collected at

one site or geographical area over a finite time period, and will include one or more field samples with associated blanks. Samples may be shipped to the Contractor in a single shipment or multiple shipments over a period of time, depending on the size of the Case.

4.2.2.2.1 A Case consists of one or more SDGs. An SDG is defined by the following, whichever is most frequent:

- Each Case of field samples received, or
- Each 20 field samples [excluding Performance Evaluation (PE) samples] within a Case, or
- Each 7 calendar day period during which field samples in a Case are received (said period beginning with the receipt of the first sample in the SDG).
- In addition, all samples and/or sample fractions assigned to an SDG must have been scheduled under the same contractual turnaround time. Preliminary Results have no impact on defining the SDG.

4.2.2.2.2 Samples shall be assigned to SDGs at the time the samples are received, and shall <u>not</u> be assigned retroactively. However, PE samples received within a Case shall be assigned to an SDG containing field samples for that Case.

4.2.2.2.3 Each sample received by the Contractor will be labeled with an EPA sample number, and accompanied by a TR bearing the sample number and descriptive information regarding the sample. The Contractor shall complete and sign the TR, recording the date of sample receipt and sample condition on receipt for each sample container.

4.2.2.2.4 The Contractor shall submit signed copies of TRs for all samples in an SDG to SMO within **three working days** following receipt of the last sample in the SDG. Faxed copies of TRs do not meet this requirement. TRs shall be submitted in SDG sets (i.e., all TRs for an SDG shall be clipped together) with an SDG Cover Sheet containing information regarding the SDG, as specified in Exhibit B.

4.2.2.2.5 USEPA Case numbers, SDG numbers, and EPA sample numbers shall be used by the Contractor in identifying samples received under this contract, both verbally and in reports/correspondence.

4.2.2.3 If insufficient sample volume (less than the required amount) is received to perform the analysis, the Contractor shall contact SMO to apprise them of the problem. SMO will contact the Region for instructions. The Region will either approve that no sample analysis be performed, or require that a reduced volume be used for the sample analysis. No other changes in the analysis will be permitted. SMO will notify the Contractor of the Region's

decision. The Contractor shall document the Region's decision in the SDG Narrative.

4.2.2.4 Analytical Techniques: The Target Compounds listed in Exhibit C shall be identified, as described in the methodologies given in Exhibit D. Automated computer programs may be used to facilitate the identification of compounds.

4.2.2.5 Preparation Techniques. The Contractor will prepare samples as described in Exhibit D. For semivolatile and pesticide/Aroclor samples, an aliquot is extracted with a solvent and concentrated. The concentrated extract is subjected to cleanup procedures and then analyzed by Gas Chromatography/Mass Spectrometry (GC/MS) for semivolatile or Gas Chromatography/Electron Capture Detector (GC/ECD) for the pesticide/Aroclor target compounds listed in Exhibit C. For volatile samples, an aliquot is purged with an inert gas, trapped on a solid sorbent, and then desorbed onto the GC/MS for analysis of the target compounds listed in Exhibit C.

4.2.2.6 Qualitative Verification of Compounds. The volatile and semivolatile compounds identified by GC/MS techniques shall be verified by an analyst competent in the interpretation of mass spectra by comparison of the suspect mass spectrum to the mass spectrum of a standard of the suspected compound. This procedure requires the use of multiple internal standards.

4.2.2.6.1 If a compound initially identified by GC/MS techniques cannot be verified, but in the technical judgment of the mass spectral interpretation specialist the identification is correct, then the Contractor shall report that identification and proceed with quantitation.

4.2.2.6.2 The pesticide/Aroclor compounds identified by GC/ECD techniques shall be verified by an analyst competent in the interpretation of gas chromatograms and by comparison of the retention times of the suspected unknowns with the retention times of respective standards of the suspected compounds. Compounds shall also be confirmed by GC/MS techniques if the compounds are of sufficient concentration to be detected by the GC/MS.

4.2.2.7 Quantitation of Verified Compounds. The Contractor shall quantitate components identified by GC/MS techniques by the internal standard method stipulated in Exhibit D. Where multiple internal standards are required by USEPA, the Contractor shall perform quantitation utilizing the internal standards specified in Exhibit D. The Contractor shall quantitate components analyzed by GC/ECD techniques by the external standard method stipulated in Exhibit D. The Contractor shall also perform an initial calibration, verify its linearity, determine the breakdown of labile components, and determine calibration factors for all standards analyzed by GC/ECD techniques as described in Exhibit D.

4.2.2.8 Tentative Identification of Non-Target Sample Components. For each analysis of a sample, the Contractor shall conduct mass spectral library searches to determine tentative compound

identifications as follows: For each volatile sample, the Contractor shall conduct a search to determine the possible identity of up to 30 organic compounds of greatest concentration which are not deuterated monitoring compounds or internal standards and are not listed in Exhibit C under volatiles or semivolatiles. For each semivolatile sample, the Contractor shall conduct a search to determine the possible identification of up to 30 organic compounds of greatest concentration which are not surrogates or internal standards and are not listed in Exhibit C under volatiles or semivolatiles. In performing searches, the NIST/EPA/NIH (May 1992 release or later) and/or Wiley (1991 release or later), or equivalent, mass spectral library shall be used.

NOTE: Substances with responses less than 10 percent of the nearest internal standard are not required to be searched in this fashion.

4.2.2.9 Quality Assurance/Quality Control (QA/QC) Procedures

4.2.2.9.1 The Contractor shall strictly adhere to all specific QA/QC procedures prescribed in Exhibits D and E. Records documenting the use of the protocol shall be maintained in accordance with the document control procedures prescribed in Exhibit F, and shall be reported in accordance with Exhibits B and H.

4.2.2.9.2 The Contractor shall maintain a Quality Assurance Plan (QAP) with the objective of providing sound analytical chemical measurements. This program shall incorporate the QC procedures, any necessary corrective action, and all documentation required during data collection, as well as the quality assessment measures performed by management to ensure acceptable data production.

4.2.2.9.3 Additional QC shall be conducted in the form of the analysis of Performance Evaluation samples submitted to the laboratory by USEPA. Unacceptable results of all such QC or Performance Evaluation samples may be used as the basis for an equitable adjustment to reflect the reduced value of the data to USEPA or rejection of the data for specific analyte(s) within an SDG or the entire SDG. Also, unacceptable results may be used as the basis for contract action. "Compliant performance" is defined as that which yields correct analyte identification and concentration values, as determined by USEPA, as well as meeting the contract requirements for analysis (Exhibit D), QA/QC (Exhibit E), data reporting and other deliverables (Exhibits B and H), and sample custody, sample documentation, and Standard Operating Procedure (SOP) documentation (Exhibit F). As an alternative to data rejection, USEPA may require re-analysis of non-compliant samples. Re-analysis will be performed by the Contractor at no additional cost to USEPA, unless it is determined that the Performance Evaluation sample(s) was defective.

4.2.3 Task III: Sample Reporting and Resubmission of Data

4.2.3.1 USEPA has provided, to the Contractor, formats for the reporting of data (Exhibits B and H). The Contractor shall be responsible for completing and submitting analysis data sheets and computer-readable data on diskette (or via an alternate means of electronic transmission approved in advance by USEPA) in a format specified in this SOW and within the time specified in Exhibit B, Section 1.1.

4.2.3.2 Use of formats other than those designated by USEPA will be deemed as non-compliant. Such data are unacceptable. Resubmission in the specified format, at no additional cost to USEPA, shall be required.

4.2.3.3 Computer-generated forms may be submitted in the hardcopy Sample Data Package(s), provided that the forms are in **exact USEPA format**. This means that the order of data elements is the same as on each USEPA-required form, including form numbers and titles, page numbers, and header information.

4.2.3.4 If the submitted data package does not conform to the specified contractual or technical criteria, the Contractor will be required to resubmit the data package with all deficiencies corrected at its own expense. The Contractor will respond within seven days to requests for additional information or explanations that result from the Government's inspection activities. If the Contractor is required to submit or resubmit data as a result of a Regional request, the data shall be clearly marked as ADDITIONAL DATA. The Contractor shall include a cover letter which describes which data are being delivered, to which USEPA project the data pertain, and who requested the data. Any and all resubmissions must be in accordance with the documentation requirements of this SOW.

4.2.3.5 The data reported by the Contractor on the hardcopy data forms and the associated computer-readable data submitted by the Contractor on diskette (or via an alternate means of electronic transmission, if approved in advance by USEPA) shall contain identical information. If discrepancies are found during Government inspection, the Contractor shall be required to resubmit either the corrected hardcopy forms or the corrected computer-readable data, or both sets of corrected data, at no additional cost to USEPA.

4.2.3.6 In addition, the Contractor must be aware of the importance of maintaining the integrity of the data generated under this contract, since it is used to make major decisions regarding public health and environmental welfare. The data may also be used in litigation against Potentially Responsible Parties (PRPs) in the enforcement of Superfund legislation.

4.3 Technical and Management Capability

4.3.1 Personnel

The Contractor shall have adequate personnel at all times during the performance of the contract to ensure that USEPA receives data that meet the terms and conditions of the contract.

4.3.2 Instrumentation

The Contractor shall have a sufficient Gas Chromatograph/Electron Capture/Data System (GC/ECD/DS), Gas Chromatograph/Mass Spectrometer/Data System (GC/MS/DS), including magnetic tape storage devices to meet all the terms and conditions of the contract.

4.3.3 Facilities

The Contractor shall maintain a facility suitable for the receipt, storage, analysis of the samples, and delivery of the product meeting the terms and conditions of the contract.

EXHIBIT B

REPORTING AND DELIVERABLES REQUIREMENTS

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1.0 CONTRACT REPORTS/DELIVERABLES DISTRIBUTION

1.1 Report Deliverable Schedule. The following table reiterates the contract reporting and deliverable requirements specified in the Contract Schedule (Performance/Delivery Schedule) and specifies the distribution that is required for each deliverable. The turnaround times for items B through E listed below are 7, 14, and 21 days.

NOTE: Specific recipient names and addresses are subject to change during the term of the contract. The USEPA Analytical Operations/Data Quality Center (AOC) Organic Program Manager will notify the Contractor in writing of such changes when they occur.

Table 1

	Item	No. of Copies[A]	Delivery Schedule	Distribution: SMO	Distribution: Region
A.[2]	Sample Traffic Reports	1	3 working days after receipt of last sample in Sample Delivery Group (SDG).[1]	X	
B.[2]	Sample Data Package[C]	1	XX[B] days after receipt of last sample in SDG.	X	
C.[2]	Data in Computer-Readable Format	1	XX[B] days after receipt of last sample in SDG.	X	X
D.[2, 3]	Complete SDG File	1	XX[B] days after receipt of last sample in SDG.		X
E.[5]	Preliminary Results (VOA Analyses)	1	Within 48 hours after receipt of each sample at laboratory, if requested.	X	X
	Preliminary Results (SV and Pest Analyses)	1	Within 72 hours after receipt of each sample at laboratory, if requested.	X	X

	Item	No. of Copies	Delivery Schedule	Distribution SMO	Distribution Region
F.[4]	Standard Operating Procedures--Technical and Evidentiary	1	Revise within 60 days after contract award.		
			Submit within 7 days of receipt of written request to recipients as directed.		As directed
G.[4]	Quality Assurance Plan	1	Revise within 60 days after contract award.		
			Submit within 7 days of receipt of written request to recipients as directed.		As directed
H.	GC/MS and GC/ECD Tapes	Lot	Retain for 3 years after data submission.		As directed
			Submit within 7 days after receipt of written request by CLP PO.		
I.	Extracts	Lot	Retain for 365 days after data submission.		As directed
			Submit within 7 days after receipt of written request by CLP PO or SMO, at USEPA's direction.		
J.[6]	Method Detection Limit Study		Submit to USEPA within 7 days after receipt of written request by CLP PO or SMO, at USEPA's discretion.		As directed

Footnotes:

[A]The number of copies specified is the number of copies required to be delivered to each recipient.

[B]The number of days associated with these elements will be provided in the associated laboratory contract document, and will also be provided at the time of the sample scheduling by the Sample Management Office (SMO) Contractor.

[C]Contractor-concurrent delivery to USEPA designated recipient (e.g., QATS) may be required upon request by the CLP PO. Retain for 365 days after data submission, and submit as directed within 7 days after receipt of written request by the CLP PO.

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[1]A Sample Delivery Group (SDG) is a group of samples within a Case, received over a period of 7 days or less, not exceeding 20 samples, (excluding PE samples) and scheduled under the same contractual turnaround (Preliminary Results have no impact on defining the SDGs). Data for all samples in the SDG are due concurrently. The date of delivery of the SDG or any samples within the SDG is the date that the last sample in the SDG is received. See Exhibit A for further description.

[2]**DELIVERABLES ARE TO BE REPORTED TOTAL AND COMPLETE. Concurrent delivery required. Delivery shall be made such that all designated recipients receive the item on the same calendar day. This includes resubmission of both the hardcopy and electronic deliverable. The date of delivery of the SDG, or any sample within the SDG, is the date all samples have been delivered. If the deliverables are due on a Saturday, Sunday, or Federal holiday, then they shall be delivered on the next business day. Deliverables delivered after this time will be considered late.**

[3]Complete SDG File will contain the original Sample Data Package plus all of the original documents described under Section 2.6.

[4]See Exhibit E and Exhibit F for a more detailed description.

[5]If requested at the time of sample scheduling, the Contractor shall provide Preliminary Results, consisting of Form I and Form I TIC analytical results, by fraction, for field and QC sample analyses via telefacsimile (fax). The Contractor may submit Preliminary Results in electronic format after obtaining permission from USEPA. The Contractor will be notified of the fax number or E-mail address at the time of sample scheduling. Sample Traffic Reports (TRs) and SDG cover sheets shall be submitted with the Preliminary Results. The Contractor shall contact SMO after confirming transmission. The Contractor shall document all communication in a telephone contact log.

[6]Method Detection Limit Study is performed annually or for each new instrument, whichever is more frequent. The information should be available on file and provided to USEPA within 7 days after the receipt of a written request.

Preliminary Results Delivery Schedule:

If the sample arrives before 5 p.m., the Preliminary Results for that sample are due within the required turnaround time. If the sample is received after 5 p.m., the Preliminary Results for that sample are due within the required turnaround time beginning at 8 a.m. the following day. **DELIVERABLES ARE TO BE REPORTED TOTAL AND COMPLETE. Concurrent**

Footnotes (Con't):

delivery is required. Delivery shall be made such that all designated recipients receive the item on the same calendar day. If the deliverables are due on a Saturday, Sunday, or Federal holiday, then they shall be delivered on the next business day. Deliverables delivered after this time will be considered late.

NOTE: As specified in the Contract Schedule (Government Furnished Supplies and Materials), unless otherwise instructed by the CLP SMO based on a Regional decision, the Contractor shall dispose of unused sample volume and used sample bottles/containers no earlier than sixty days following submission of the reconciled Complete SDG File. Sample disposal and disposal of unused sample bottles/containers is the responsibility of the Contractor, and should be done in accordance with all applicable laws and regulations governing disposal of such materials.

1.2 Distribution

The following addresses correspond to the "Distribution" column in the tables in Sections 1.1.

SMO: USEPA Contract Laboratory Program
Sample Management Office (SMO)[1]
2000 Edmund Halley Dr.
Reston, VA 20191-3436

Region: USEPA Region: The SMO will provide the Contractor with the list of addresses for the 10 USEPA Regions. SMO will provide the Contractor with updated Regional address/name lists as necessary throughout the period of the contract and identify other client recipients on a case-by-case basis.

USEPA AOC Organic Program Manager:

Mailing Address: USEPA OERR Analytical Operations/
Data Quality Center
Ariel Rios Building (5204G)
1200 Pennsylvania Avenue, N.W.
Washington, DC 20469
Attn: CLP Organic Program Manager

Fed-Ex/Overnight Delivery: USEPA OERR Analytical Operations/
Data Quality Center
1235 Jefferson Davis Highway
Crystal Gateway I, 12th Floor
Arlington, VA 22202
Attn: CLP Organic Program Manager

[1]The Sample Management Office (SMO) is a contractor-operated facility operating under the CLASS contract awarded and administered by USEPA.

USEPA Regional CLP Project Officer (CLP PO):

SMO will provide the Contractor with the list of addresses for the CLP POs. SMO will provide the Contractor with updated name/address lists as necessary throughout the period of the contract.

QATS

USEPA Contract Laboratory Program (CLP)
Quality Assurance Technical Support (QATS) Laboratory[2]
2700 Chandler Avenue, Building C
Las Vegas, NV 89120
Attn: Data Audit Staff

[2]The Quality Assurance Technical Support (QATS) Laboratory is a contractor operated facility operating under the QATS contract awarded and administered by the USEPA.

2.0 REPORTING REQUIREMENTS AND ORDER OF DATA DELIVERABLES

2.1 Introduction

The Contractor shall provide reports and other deliverables as specified in the Contract Schedule (Performance/Delivery Schedule). The required content and form of each deliverable is described in this exhibit. All reports and documentation must be:

- Legible;
- Clearly labeled and completed in accordance with instructions in this exhibit;
- Arranged in the order specified in this section;
- Paginated consecutively in ascending order starting from the Sample Delivery Group (SDG) Narrative;
- Copies must be legible and double-sided; and
- **Information reported on the forms listed in Exhibit B (excluding the Sample Log-in Sheet [DC-1] and the Complete SDG File (CSF) Inventory Sheet [DC-2]) must be either typewritten or computer-generated. Handwritten corrections of the information must be legible, signed, and dated.**

NOTE: Complete SDG files need not be double-sided. (The CSF is composed of original documents.) However, Sample Data Packages delivered to Sample Management Office (SMO) must be double-sided.

2.1.1 Requirements for each deliverable item cited in the Contract Schedule (Contract Performance/Delivery Schedule) are specified in Sections 2.3 to 2.9. Prior to submission, the Contractor shall arrange items and the components of each item in the order listed in these sections.

2.1.2 The Contractor shall use USEPA Case numbers (including SDG numbers) and EPA sample numbers to identify samples received under this contract, both verbally and in reports/correspondence. The contract number shall be specified in all correspondence.

2.2 Resubmission of Data

If submitted documentation does not conform to the above criteria, the Contractor shall resubmit such documentation with deficiency(ies) corrected, at no additional cost to USEPA.

2.2.1 The Contractor shall respond within seven days to written requests from data recipients for additional information or explanations that result from the Government's inspection activities, unless otherwise specified in the contract.

2.2.2 Whenever the Contractor is required to submit or resubmit data as a result of an on-site laboratory evaluation, or through a Contract Laboratory Program Project Office (CLP PO) action, or through a Regional data reviewer's request, the data shall be clearly marked as ADDITIONAL DATA and shall be sent to both contractual data recipients (SMO and the Region; to USEPA designated recipient, upon written request). The Contractor shall include a cover letter which describes which data are being delivered, to which USEPA Case(s) the data pertain, and **who requested the data**.

2.2.3 Whenever the Contractor is required to submit or resubmit data as a result of Contract Compliance Screening (CCS) review by SMO, the data shall be sent to both contractual data recipients (SMO and the Region; to the USEPA designated recipient (e.g., QATS), when a written request for the Sample Data Package has been made). In all instances, the Contractor shall include a color-coded COVER SHEET (Laboratory Response to Results of Contract Compliance Screening) provided by SMO.

2.3 Quality Assurance Plan (QAP) and Standard Operating Procedures (SOPs)

The Contractor shall adhere to the requirements in Exhibits E and F.

2.4 Sample Traffic Reports (TRs)

Each sample received by the Contractor will be labeled with a EPA sample number, and will be accompanied by a Sample TR bearing the sample number and descriptive information regarding the sample. The Contractor shall complete the TR (marked "Lab Copy for Return to SMO"), recording the date of sample receipt and sample condition upon receipt for each container, and shall sign the TR. Information shall be recorded for each sample in the SDG.

2.4.1 The Contractor shall submit TRs in SDG sets (i.e., TRs for all samples in an SDG shall be clipped together), with an SDG cover sheet attached. The SDG cover sheet shall contain the following items:

- Laboratory name;
- Contract number;
- Sample analysis price (full sample price from the contract);
- Case number; and
- List of EPA sample numbers of all samples in the SDG, identifying the <u>first</u> and <u>last</u> samples received, and their dates of receipt (LRDs).

NOTE: When more than one sample is received in the first or last SDG shipment, the "first" sample received would be the lowest sample number (considering both alpha and numeric designations); the "last" sample received would be the highest sample number (considering both alpha and numeric designations).

2.4.2 Each TR shall be clearly marked with the SDG number, entered below the laboratory receipt date on the TR. The TR for the <u>last</u> sample received in the SDG shall be clearly marked "SDG--FINAL SAMPLE". The SDG number is the EPA sample number of the first sample received in the SDG. When several samples are received together in the first SDG shipment, the SDG number shall be the lowest sample number (considering both alpha and numeric designations) in the first group of samples received under the SDG.

2.4.3 If samples are received at the laboratory with multi-sample TRs, all the samples on one multi-sample TR may not necessarily be in the same SDG. In this instance, the Contractor shall make the appropriate number of photocopies of the TR, and submit one copy with each SDG cover sheet.

2.5 Sample Data Package

The Sample Data Package is divided into the five major units described in this section. The last three units are each specific to an analytical fraction (volatiles, semivolatiles, and pesticides/Aroclors). If the analysis of a fraction is not required, then that fraction-specific unit is not required as a deliverable. The Sample Data Package shall include data for the analyses of all samples in one SDG, including field samples, dilutions, re-analyses, blanks, Laboratory Control Samples, and any requested Matrix Spike/Matrix Spike Duplicate(s) (MS/MSD). The Contractor shall retain a copy of the CSF for 365 days after final acceptance of data. After this time, the Contractor may dispose of the package.

2.5.1 SDG Narrative. This document shall be clearly labeled "SDG Narrative" and shall contain: laboratory name; Case number; EPA sample numbers in the SDG, differentiating between initial analyses and re-analyses; SDG number; Contract number; and detailed documentation of any quality control, sample, shipment and/or analytical problems encountered in processing the samples reported in the data package. The Contractor shall include any technical and administrative problems encountered, the corrective actions taken, the resolution, and an explanation for all flagged edits (e.g., manual edits) on quantitation lists. This includes documenting the alternative technique used to determine cooler temperature if a temperature indicator bottle is not present in the cooler. The Contractor shall also provide, in the SDG Narrative, sufficient information, including equations or curves (at least one equation or curve per method), to allow the recalculation of sample results from raw instrument output. The Contractor shall also include a discussion of any flexibility SOW modification. This includes attaching a copy of the approved modification form to the SDG Narrative. Additionally the Contractor shall also identify and explain any differences which exist between the Form Is and supporting documentation provided in the data package and those previously provided as preliminary results.

All Gas Chromatograph (GC) columns used for analysis shall be documented here, by fraction. List the GC column identification--brand name, the internal diameter, in millimeters (mm), and the length, in meters, packing/coating material and film thickness. The trap used for volatile analysis shall be described here. List trap name, when denoted by manufacturer, its composition [packing material/brand name, amount of packing material, in length, centimeters (cm)]. All tentatively identified (semi-volatile) alkanes and their estimated concentrations are to be reported here. The EPA sample number, the CAS number, when available, the alkane compound (or series) name, and its estimated concentration shall be provided in tabular format. The Contractor shall document in the SDG Narrative all instances of manual integration. The SDG Narrative shall contain the following statement, verbatim: "I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the laboratory manager or his/her designee, as verified by the following signature." This statement shall be directly followed by an original signature of the laboratory manager or their designee with a typed line below it containing the signer's name and title, and the date of signature.

2.5.1.1 The samples analyzed under this contract should not exhibit a matrix effect which would prevent the Contractor from meeting the requirements of the contract. Sample re-extraction/re-analyses performed as a result of suspected matrix interferences beyond the scope of the method will be reviewed on a case-by-case basis for payment purposes by the CLP PO. Send or telefax to the CLP PO a copy of the SDG Narrative (include your contract number), a description of the situation and the requested CLP PO action, either prior or concurrent with the delivery of the Sample Data Package.

2.5.1.2 The Contractor shall list the pH determined for each water sample submitted for volatiles analysis. This information may appear as a simple list or table in the SDG Narrative. The purpose of this pH determination is to ensure that all water volatiles samples were acidified in the field. No pH adjustment is to be performed by the Contractor on water samples for volatiles analysis.

2.5.2 Traffic Reports. The Contractor shall include a copy of the TRs submitted in Section 2.4 for all of the samples in the SDG. The TRs shall be arranged in increasing EPA sample number order, considering both letters and numbers. Copies of the SDG cover sheet are to be included with the copies of the TRs. (See Section 2.4 for more detail on reporting requirements for TRs.) In the case of multi-sample TRs, the Contractor shall make the appropriate number of photocopies of the TR so that a copy is submitted with each applicable data package. In addition, in any instance where samples from more than one multi-sample TR are in the same data package, the Contractor shall submit a copy of the SDG cover sheet with copies of the TRs.

2.5.3 Volatiles Data

2.5.3.1 Volatiles QC Summary

2.5.3.1.1 Deuterated Monitoring Compound Recovery (Form II LCV-1, LCV-2).

2.5.3.1.2 Matrix Spike/Matrix Spike Duplicate Recovery (Form III LCV). This data shall be provided upon Region's request.

2.5.3.1.3 Method Blank Summary (Form IV LCV): If more than a single form is necessary, forms shall be arranged in chronological order by date of analysis of the blank, by instrument.

2.5.3.1.4 GC/MS instrument performance check (Form V LCV): If more than a single form is necessary, forms shall be arranged in chronological order, by instrument.

2.5.3.1.5 Internal Standard Area and RT Summary (Form VIII LCV): If more than a single form is necessary, forms shall be arranged in chronological order, by instrument.

2.5.3.2 Volatiles Sample Data. Sample data, including dilutions, and re-analyses data, shall be arranged in packets with the Organic Analysis Data Sheet (Form I LCV-1, LCV-2, including Form I LCV-TIC), followed by the raw data for volatile samples. These sample packets shall be placed in increasing EPA sample number order, considering both letters and numbers.

2.5.3.2.1 Target Compound Results, Organic Analysis Data Sheet (Form I LCV-1, LCV-2). Tabulated results (identification and quantitation) of the specified target compounds (Exhibit C,

Volatiles) shall be included. The validation and release of these results are authorized by a specific, signed statement in the SDG Narrative (Section 2.5.1). In the event that the laboratory manager cannot verify all data reported for each sample, the laboratory manager shall provide a detailed description of the problems associated with the sample in the SDG Narrative.

2.5.3.2.2 Tentatively Identified Compounds (Form I LCV-TIC). Form I LCV-TIC is the tabulated list of the highest probable match for up to 30 organic compounds that are not deuterated monitoring compounds or internal standard compounds and are not listed in Exhibit C. It includes the Chemical Abstracts Service (CAS) registry number (if applicable), tentative identification, and estimated concentration. This form shall be included even if no compounds are found. If no compounds are found, indicate this on the form by entering "0" in the field for "Number Found".

2.5.3.2.3 Reconstructed Total Ion Chromatograms (for each sample or sample extract, including dilutions and re-analyses). Reconstructed ion chromatograms shall be normalized to the largest nonsolvent component and shall contain the following header information:

- EPA sample number;
- Date and time of analysis;
- GC/MS instrument identifier;
- Lab file identifier, and
- Analyst ID.

2.5.3.2.3.1 Internal standards and deuterated monitoring compounds shall be labeled with the names of compounds, either directly out from the peak or on a printout of retention times, if retention times (or scan numbers) are printed above the peak.

2.5.3.2.3.2 If automated data system procedures are used for preliminary identification and/or quantitation of the target compounds, the complete data system report shall be included in all Sample Data Packages, in addition to the reconstructed ion chromatogram. The complete data system report shall include all of the information listed below. For laboratories which do not use the automated data system procedures, a laboratory "raw data sheet" containing the following information shall be included in the Sample Data Package, in addition to the chromatogram:

- EPA sample number;
- Date and time of analysis;
- Retention time or scan number of identified target compounds;
- Ion used for quantitation with measured area;
- Copy of area table from data system;

- GC/MS instrument identifier;
- Lab file identifier; and
- Analyst ID.

2.5.3.2.3.3 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/MS operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration scan range. In addition, a hardcopy printout of the Extracted Ion Current Profile (EICP) of the quantitation ion displaying the manual integration shall be included in the raw data. This applies to all compounds listed in Exhibit C (Volatiles), internal standards and deuterated monitoring compounds.

- EICPs displaying each manual integration.

2.5.3.2.4 Other Required Information. For each sample, by each compound identified, the following items shall be included in the data package.

- Copies of raw spectra and copies of background-subtracted mass spectra of target compounds listed in Exhibit C (Volatiles) that are identified in the sample and corresponding background-subtracted target compound standard mass spectra. Spectra shall be labeled with EPA sample number, lab file identifier, date and time of analysis, and GC/MS instrument identifier. Compound names shall be clearly marked on all spectra.
- Copies of mass spectra of non-deuterated monitoring/non-internal standard organic compounds not listed in Exhibit C with associated best-match spectra (minimum of one, maximum of three best matches). Spectra shall be labeled with EPA sample number, lab file identifier, date and time of analysis, and GC/MS instrument identifier. Compound names shall be clearly marked on all spectra.

2.5.3.3 Volatiles Standards Data

2.5.3.3.1 Initial calibration data (Form VI LCV-1, LCV-2, LCV-3) shall be included in order by instrument, if more than one instrument is used.

- Volatile standard(s) reconstructed ion chromatograms and quantitation reports for the initial (five-point) calibration, labeled as in Section 2.5.3.2.3. Spectra are not required.
- All initial calibration data that pertain to samples in the data package shall be included, regardless of when it was performed and for which Case. When more than one initial calibration is performed, the data shall be in chronological order, by instrument.
- EICPs displaying each manual integration.

2.5.3.3.2 Continuing calibration data (Form VII LCV-1, LCV-2, LCV-3) shall be included in order by instrument, if more than one instrument is used.

- Volatile standard(s) reconstructed ion chromatograms and quantitation reports for all continuing (12-hour) calibrations, labeled as in Section 2.5.3.2.3. Spectra are not required.
- When more than one continuing calibration is performed, forms shall be in chronological order, by instrument.
- EICPs displaying each manual integration.

2.5.3.3.3 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/MS operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration scan range. In addition, a hardcopy printout of the EICP of the quantitation ion displaying the manual integration shall be included in the raw data. This applies to all compounds listed in Exhibit C (Volatiles), internal standards and deuterated monitoring compounds.

2.5.3.4 Volatiles Raw QC Data

2.5.3.4.1 4-Bromofluorobenzene (BFB) data shall be arranged in chronological order by instrument for each 12-hour period, for each GC/MS system utilized.

- Bar graph spectrum, labeled as in Section 2.5.3.2.4.
- Mass listing, labeled as in Section 2.5.3.2.4.
- Reconstructed total ion chromatogram, labeled as in Section 2.5.3.2.3.

2.5.3.4.2 Blank data shall be arranged by type of blank (method, storage, instrument) and shall be in chronological order by instrument.

NOTE: This order is different from that used for samples.

- Tabulated results (Form I LCV-1, LCV-2).
- Tentatively identified compounds (Form I LCV-TIC) even if none are found.
- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.3.2.3.
- Target compound spectra with laboratory-generated standard spectra, labeled as in Section 2.5.3.2.4. Data systems which are incapable of dual display shall provide spectra in the following order:

-- Raw target compound spectra.

-- Enhanced or background-subtracted spectra.

-- Laboratory-generated standard spectra.

- GC/MS library search spectra for tentatively identified compounds, labeled as in Section 2.5.3.2.4.

- Quantitation/calculation of tentatively identified compound concentrations.

2.5.3.4.3 Volatiles Matrix Spike Data

- Tabulated results (Form I LCV-1, LCV-2) of target compounds. Form I LCV-TIC is not required.

- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.3.2.3. Spectra are not required.

2.5.3.4.4 Volatiles Matrix Spike Duplicate Data

- Tabulated results (Form I LCV-1, LCV-2) of target compounds. Form I LCV-TIC is not required.

- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.3.2.3. Spectra are not required.

2.5.4 Semivolatiles Data

2.5.4.1 Semivolatiles QC Summary

2.5.4.1.1 Deuterated Monitoring Compound Recovery (Form II LCSV-1, LCSV-2).

2.5.4.1.2 Matrix Spike/Matrix Spike Duplicate Recovery (Form III LCSV): This data shall be provided upon Region's request.

2.5.4.1.3 Method Blank Summary (Form IV LCSV): If more than a single form is necessary, forms shall be arranged in chronological order by date of analysis of the blank, by instrument.

2.5.4.1.4 GC/MS Instrument Performance Check (Form V LCSV): If more than a single form is necessary, forms shall be arranged in chronological order, by instrument.

2.5.4.1.5 Internal Standard Area and RT Summary (Form VIII LCSV): If more than a single form is necessary, forms shall be arranged in chronological order, by instrument.

2.5.4.2 Semivolatiles Sample Data. Sample data, including dilutions and re-analysis samples, shall be arranged in packets with the Organic Analysis Data Sheet **(Form I LCSV-1, LCSV-2, including Form I LCSV-TIC)**, followed by the raw data for semivolatile samples. These sample packets shall be placed in increasing EPA sample number order, considering both letters and numbers.

2.5.4.2.1 Target Compound Results, Organic Analysis Data Sheet (Form I LCSV-1, LCSV-2). Tabulated results (identification and quantitation) of the specified target compounds (Exhibit C, Semivolatiles) shall be included. The validation and release of these results are authorized by a specific, signed statement in the SDG Narrative (Section 2.5.1). In the event that the laboratory manager cannot verify all data reported for each sample, the laboratory manager shall provide a detailed

description of the problems associated with the sample in the SDG Narrative.

2.5.4.2.2 Tentatively Identified Compounds (Form I LCSV-TIC). Form I LCSV-TIC is the tabulated list of the highest probable match for up to 30 organic compounds that are not deuterated monitoring compounds, or internal standard organic compounds and are not listed in Exhibit C (Volatiles, Semivolatiles). It includes the CAS registry number (if applicable), tentative identification, and estimated concentration. This form shall be included even if no compounds are found. If no compounds are found, indicate this on the form by entering "0" in the field for "Number TICs found."

2.5.4.2.3 Reconstructed Total Ion Chromatograms (for each sample, including dilutions and re-analyses). Reconstructed ion chromatograms shall be normalized to the largest nonsolvent component and shall contain the following header information:

- EPA sample number;
- Date and time of analysis;
- GC/MS instrument identifier;
- Lab file identifier; and
- Analyst ID.

2.5.4.2.3.1 Internal standards and deuterated monitoring compounds shall be labeled with the names of compounds, either directly out from the peak or on a printout of retention times if retention times (or scan numbers) are printed over the peak.

2.5.4.2.3.2 If automated data system procedures are used for preliminary identification and/or quantitation of the target compounds, the complete data system report shall be included in all Sample Data Packages, in addition to the reconstructed ion chromatogram. The complete data system report shall include all of the information listed below. For laboratories which do not use the automated data system procedures, a laboratory "raw data sheet" containing the following information shall be included in the Sample Data Package, in addition to the chromatogram:

- EPA sample number;
- Date and time of analysis;
- Retention time or scan number of identified target compounds;
- Ion used for quantitation with measured area;
- Copy of area table from data system;
- GC/MS instrument identifier;
- Lab file identifier; and
- Analyst ID.

2.5.4.2.3.3 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/MS operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration scan range. In addition, a hardcopy printout of the EICP of the quantitation ion displaying the manual integration shall be included in the raw data. This applies to all compounds listed in Exhibit C (Semivolatiles), internal standards and deuterated monitoring compounds.

- EICPs displaying each manual integration.

2.5.4.2.4 Other Required Information. For each sample, by each compound identified, the following shall be included in the data package.

- Copies of raw spectra and copies of background-subtracted mass spectra of target compounds listed in Exhibit C (Semivolatiles) that are identified in the sample and corresponding background-subtracted target compound standard mass spectra. Spectra shall be labeled with EPA sample number, lab file identifier, and date and time of analysis, and GC/MS instrument identifier compound names shall be clearly marked on all spectra.

- Copies of mass spectra of non-deuterated monitoring compounds/non-internal standard organic compounds not listed in Exhibit C (Volatiles and Semivolatiles) with associated best-match spectra (minimum of one, maximum of three best matches). This includes the mass spectra for tentatively identified alkanes. Spectra shall be labeled with EPA sample number, lab file identifier, and date and time of analysis, and GC/MS instrument identifier compound names shall be clearly marked on all spectra.

2.5.4.3 Semivolatiles Standards Data

2.5.4.3.1 Initial calibration data (Form VI LCSV-1, LCSV-2, LCSV-3) shall be included in order by instrument, if more than one instrument is used.

- Semivolatile standard(s), reconstructed ion chromatograms, and quantitation reports for the initial (five-point) calibration, labeled as in Section 2.5.4.2.3. Spectra are not required.

- All initial calibration data that pertain to samples in the data package shall be included, regardless of when it was performed and for which Case. When more than one initial calibration is performed, the data shall be in chronological order, by instrument.

- EICPs displaying each manual integration.

2.5.4.3.2 Continuing calibration data (Form VII LCSV-1, LCSV-2, LCSV-3) shall be included in order by instrument, if more than one instrument used.

- Semivolatile standard(s) reconstructed ion chromatograms and quantitation reports for all continuing (12-hour)

calibrations, labeled as in Section 2.5.4.2.3. Spectra are not required.

- When more than one continuing calibration is performed, forms shall be in chronological order, by instrument.

- EICPs displaying each manual integration.

2.5.4.3.3 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/MS operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration scan range. In addition, a hardcopy printout of the EICP of the quantitation ion displaying the manual integration shall be included in the raw data. This applies to all compounds listed in Exhibit C (Semivolatiles), internal standards, and deuterated monitoring compounds.

2.5.4.4 Semivolatiles Raw QC Data

2.5.4.4.1 Decafluorotriphenylphosphine (DFTPP) data shall be arranged in chronological order by instrument for each 12-hour period, for each GC/MS system utilized.

- Bar graph spectrum, labeled as in Section 2.5.4.2.4.

- Mass listing, labeled as in Section 2.5.4.2.4.

- Reconstructed total ion chromatogram, labeled as in Section 2.5.4.2.3.

2.5.4.4.2 Blank data shall be included in chronological order by extraction date.

NOTE: This order is different from that used for samples.

- Tabulated results (Form I LCSV-1, LCSV-2).

- Tentatively identified compounds (Form I LCSV-TIC) even if none are found.

- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.4.2.3.

- Target compound spectra with laboratory-generated standard spectra, labeled as in Section 2.5.4.2.4. Data systems which are incapable of dual display shall provide spectra in the following order:

-- Raw target compound spectra.

-- Enhanced or background-subtracted spectra.

-- Laboratory-generated standard spectra.

- GC/MS library search spectra for tentatively identified compounds, labeled as in Section 2.5.4.2.4.

- Quantitation/calculation of tentatively identified compound concentrations.

2.5.4.4.3 Semivolatiles Matrix Spike Data

- Tabulated results (Form I LCSV-1, LCSV-2) of target compounds. Form I LCSV-TIC is not required.
- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.4.2.3. Spectra are not required.

2.5.4.4.4 Semivolatiles Matrix Spike Duplicate Data

- Tabulated results (Form I LCSV-1, LCSV-2) of target compounds. Form I LSV-TIC is not required.
- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.4.2.3. Spectra are not required.

2.5.5 Pesticide/Aroclor Data

2.5.5.1 Pesticide/Aroclor QC Summary

2.5.5.1.1 Surrogate Percent Recovery Summary (Form II LCP).

2.5.5.1.2 Matrix Spike/Matrix Spike Duplicate Recovery (Form III LCP-1): This data shall be provided upon Region's request.

2.5.5.1.3 Laboratory Control Sample Recovery (Form III LCP-2).

2.5.5.1.4 Method Blank Summary (Form IV LCP): If more than a single form is necessary, forms shall be arranged in chronological order by date of analysis of the blank.

2.5.5.2 Pesticide/Aroclor Sample Data. Sample data including dilutions and re-analyses shall be arranged in packets with the Organic Analysis Data Sheet (Form I LCP) and the raw data for pesticide samples. These sample packets should then be placed in increasing EPA sample number order, considering both letters and numbers.

2.5.5.2.1 Target Compound Results, Organic Analysis Data Sheet (Form I LCP). Tabulated results (identification and quantitation) of the specified target compounds (Exhibit C, Pesticides/Aroclors) shall be included. The validation and release of these results is authorized by a specific, signed statement in the SDG Narrative (see Section 2.5.1). In the event that the laboratory manager cannot verify all data reported for each sample, the laboratory manager shall provide a detailed description of the problems associated with the sample in the SDG Narrative.

2.5.5.2.2 Copies of Pesticide Chromatograms. Positively identified (identified according to the criteria in Exhibit D Pesticides and Aroclors) compounds for each column shall be labeled with the names of compounds, either directly out from the peak on the chromatogram, or on a printout of retention times on the data system printout if retention times are printed over the peak on the chromatogram. All chromatograms shall meet the acceptance criteria in Exhibit D Pesticides and Aroclors, and shall be labeled with the following information:

- EPA sample number;
- Volume injected (µL);

- Date and time of injection;
- GC column identifier (by stationary phase and internal diameter);
- GC instrument identifier; and
- Scaling factor.

2.5.5.2.3 Copies of pesticide chromatograms from the second GC column shall be included and labeled as in Section 2.5.5.2.2.

2.5.5.2.4 Data System Printout. A printout of retention time and corresponding peak height or peak area shall accompany each chromatogram. The printout shall be labeled with the EPA sample number. In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/ECD operator must identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration time range.

2.5.5.2.5 All manual work sheets shall be included in the Sample Data Package.

2.5.5.3 Pesticide/Aroclor Standards Data

2.5.5.3.1 Initial Calibration of Single Component Analytes (Form VI LCP-1, LCP-2): for all GC columns, all instruments, in chronological order by GC column and instrument.

2.5.5.3.2 Initial Calibration of Multicomponent Analytes (Form VI LCP-3): for all GC columns, all instruments, in chronological order by GC column and instrument.

2.5.5.3.3 Analyte Resolution Summary (Form VI LCP-4): for all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.4 Performance Evaluation Mixture (Form VI LCP-5): for all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.5 Individual Standard Mixture A (Form VI LCP-6): for all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.6 Individual Standard Mixture B (Form VI LCP-7): for all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.7 Calibration Verification Summary (Form VII LCP-1): for all performance evaluation mixtures and instrument blanks, on all GC columns and instruments, in chronological order by GC column and instrument. Report for each associated instrument blank.

2.5.5.3.8 Calibration Verification Summary (Form VII LCP-2): for all mid-point concentrations of Individual Standard Mixtures A and B and reported for all instrument blanks used for calibration verification, on all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.9 Analytical Sequence (Form VIII LCP): for all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.10 Florisil Cartridge Check (Form IX LCP): for all lots of cartridges used to process samples in the SDG.

2.5.5.3.11 Pesticide Identification Summary for Single Component Analytes (Form X LCP-1): for all samples with positively identified single component analytes, in order by increasing EPA sample number.

2.5.5.3.12 Pesticide Identification Summary for Multicomponent Analytes (Form X LCP-2): for all samples with positively identified multicomponent analytes, in order by increasing EPA sample number.

2.5.5.3.13 Chromatograms and data system printouts shall be included for all standards including the following:

- Resolution check mixture;
- Performance evaluation mixtures, all;
- Individual Standard Mixture A, at three concentrations, each initial calibration;
- Individual Standard Mixture B, at three concentrations, each initial calibration;
- All multicomponent analytes (toxaphene and Aroclors), each initial calibration;
- All mid-point concentrations of Individual Standard Mixtures A and B used for calibration verification; and
- All multicomponent analyte standards analyzed for confirmation.

2.5.5.3.14 A printout of retention time and corresponding peak height or peak area shall accompany each chromatogram. The printout shall be labeled with the EPA sample number. In addition, all chromatograms shall meet the acceptance criteria in Exhibit D Pesticides and Aroclors, and shall be labeled with the following:

- EPA sample number for the standard, e.g., INDA, INDB, etc. (See Section 3.3.7.6 for details);
- Labels of all standard peaks for all individual compounds either directly out from the peak on the chromatogram or on the printout of retention times on the data system printout if retention times are printed over the peak on the chromatogram;
- Total nanograms injected for each standard. When total nanograms injected appear on the printout, it is not necessary to include them on the chromatogram;
- Date and time of injection;

- GC column identifier (by stationary phase and internal diameter);
- GC instrument identifier; and
- Scaling factor.

NOTE: In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/EC operator must identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration time range.

2.5.5.4 Pesticide/Aroclor Raw QC Data

2.5.5.4.1 Blank data shall be arranged by type of blank (method, instrument, sulfur cleanup) and shall be in chronological order by instrument.

NOTE: This order is different from that used for samples.

- Tabulated results (Form I LCP).
- Chromatogram(s) and data system printout(s) (GC) for each GC column and instrument used for analysis, labeled as in Sections 2.5.5.2.2 and 2.5.5.2.4.

2.5.5.4.2 Laboratory Control Sample Data

- Tabulated results (Form I LCP) of target compounds.
- Chromatogram(s) and data system printout(s) (GC), labeled as in Sections 2.5.5.2.2 and 2.5.5.2.4 and for both columns as in Section 2.5.5.2.3.

2.5.5.4.3 Pesticides Matrix Spike

- Tabulate results (Form I LCP) of target compounds.
- Chromatogram(s) and data system printout(s) (GC), labeled as in Section 2.5.5.2.2 and 2.5.5.2.4 and for both columns as in Section 2.5.5.2.3.

2.5.5.4.4 Pesticides Matrix Spike Duplicate Data

- Tabulate results (Form I LCP) of target compounds.
- Chromatogram(s) and data system printout(s) (GC), labeled as in Section 2.5.5.2.2 and 2.5.5.2.4 and for both columns as in Section 2.5.5.2.3.

2.5.5.5 Raw Florisil Data. The chromatogram and data system report(s) shall be arranged in chronological order by Florisil cartridge performance check analyses.

- Chromatograms and data system reports labeled as specified in Sections 2.5.5.2.2 and 2.5.5.2.4 for the florisil cartridge performance check analyses.
- Chromatograms and data system reports for standard analyses used to quantify compounds in the Florisil cartridge performance check analysis, labeled as specified in Section

2.5.5.3.14 (i.e., Individual Standard Mixture A and Individual Standard Mixture B and the 2,4,5 Trichlorophenol solution).

2.6 Complete SDG File (CSF)

As specified in Section 1, the Contractor shall deliver one Complete SDG File (CSF) including the original Sample Data Package to the Region concurrently with delivery of the Sample Data Package to SMO. (Delivery to a USEPA designated recipient is only required upon written request.)

2.6.1 The CSF will contain all original documents as specified in Section 3 and Exhibit F, and in Form DC-2 (see Section 4). No photocopies of original documents will be placed in the CSF unless the original data was initially written in a bound notebook, maintained by the Contractor, or the originals were previously submitted to USEPA with another Case/SDG in accordance with the requirements described in Exhibit F. The contents of the CSF shall be numbered according to the specifications described in Section 3.20.

2.6.2 The CSF will consist of the following original documents in addition to the documents in the Sample Data Package.

NOTE: All SDG-related documentation may be used or admitted as evidence in subsequent legal proceedings. Any other SDG-specific documents generated after the CSF is sent to USEPA, as well as copies that are altered in any fashion, are also deliverables to USEPA. (Deliver the original to the Region and a copy to SMO. Delivery to a USEPA-designated recipient is only upon written request.)

2.6.2.1 The original Sample Data Package.

2.6.2.2 A completed and signed document inventory sheet (Form DC-2).

2.6.2.3 All original shipping documents including, but not limited to, the following documents:

- USEPA Chain-of-Custody Record;
- Airbills (if an airbill is not received, include a hardcopy receipt requested from the shipping company or a printout of the shipping company's electronic tracking information);
- USEPA TRs; and
- Sample tags (if present) sealed in plastic bags.

2.6.2.4 All original receiving documents including, but not limited to, the following documents:

- Form DC-1;
- Other receiving forms or copies of receiving logbooks; and
- SDG cover sheet.

2.6.2.5 All original laboratory records, not already submitted in the Sample Data Package, of sample transfer, preparation and analysis including, but not limited to, the following documents:

- Original preparation and analysis forms or copies of preparation and analysis logbook pages;

- Internal sample and sample extract transfer chain-of-custody records;
- Screening records; and
- All instrument output, including strip charts from screening activities.

2.6.2.6 All other original SDG-specific documents in the possession of the Contractor including, but not limited to, the following documents:

- Telephone contact logs;
- Copies of personal logbook pages;
- All handwritten SDG-specific notes; and
- Any other SDG-specific documents not covered by the above.

2.6.3 If the Contractor does submit SDG-specific documents to USEPA after submission of the CSF, the documents should be identified with unique accountable numbers, a revised Form DC-2 should be submitted, and the unique accountable numbers and the locations of the documents in the CSF should be recorded in the "Other Records" section on the revised Form DC-2. Alternatively, the Contractor may number the newly submitted SDG-specific documents to USEPA as a new CSF and submit a new Form DC-2. The revised Form DC-2 or new Form DC-2 should be submitted to the USEPA Regions only.

2.7 Data in Computer-Readable Format

The Contractor shall provide a computer-readable copy of the data on data reporting Forms I-X for all samples in the SDG as specified in Exhibit H, and delivered as specified in the Contract Schedule (Contract Performance/Delivery Schedule). Computer-readable data deliverables shall be submitted on IBM or IBM-compatible, 3.5-inch high-density 1.44 MB diskette (or via an alternate means of electronic transmission approved in advance by the USEPA).

2.7.1 When submitted, the diskette(s) shall be packaged and shipped in such a manner that the diskette(s) cannot be bent or folded, and will not be exposed to extreme heat or cold or any type of electromagnetic radiation. The diskette(s) shall be included in the same shipment as the hardcopy data and shall, at a minimum, be enclosed in a diskette mailer. The diskette(s) shall be labeled as specified in Exhibit H, Section 8.4.

2.7.2 The data shall be recorded in ASCII, text file format, and shall adhere to the file, record, and field specifications listed in Exhibit H.

2.8 Preliminary Results

The Form I data results shall be submitted for all samples in one SDG of a Case. This includes tabulated target compound results (Form I) for the volatile, semivolatile, and pesticide fractions, and tentatively identified compounds (Form I TIC) for the volatile and semivolatile fractions. The Contractor shall clearly identify the Preliminary Results by labeling each Form I and Form I TIC as"Preliminary Results" under each form title (e.g., under Volatile Organics Analysis Data Sheet, Volatile Organics Analysis Data Sheet Tentatively Identified Compounds).

2.8.1 The Contractor shall also include a disclaimer at the bottom of all Form Is stating that the "Data results contained on this Form I are for scanning purposes only and may not have been validated fro CLP criteria."

2.8.2 Sample Traffic Reports and SDG Cover Sheets shall be submitted with the Preliminary Results.

2.9 GC/MS and GC/ECD Tapes

The Contractor shall adhere to the requirements in Section 13 of Exhibit E.

2.10 Extracts

The Contractor shall preserve sample extracts at 4°C (±2°C) in bottles/vials with PTFE-lined septa. Extract bottles/vials shall be labeled with EPA sample number, Case number, and SDG number. The Contractor shall maintain a logbook of stored extracts, listing EPA sample numbers and associated Case and SDG numbers. The Contractor shall retain extracts for 365 days following submission of the reconciled complete Sample Data Package. During that time, the Contractor shall submit extracts and associated logbook pages within seven days following receipt of a written request from the CLP PO.

3.0 FORM INSTRUCTIONS

3.1 Introduction

This section includes specific instructions for completing the data reporting forms required under this contract. Each of the forms is specific to a given fraction (volatile, semivolatile, or pesticide/Aroclor). The Contractor shall submit only those forms pertaining to the fractions analyzed for a given sample(s). For instance, if a sample is scheduled for volatiles analysis only, the Contractor shall provide only forms for the volatile fraction.

3.2 General Information

The Contractor shall report values on the hardcopy forms according to the individual form instructions in this section. For instance, all results for concentrations of target compounds shall be reported to two significant figures. Values that exceed the maximum length allowed shall be reported to the maximum possible, maintaining the specified significance.

3.2.1 The data reporting forms presented in Section 4 have been designed in conjunction with the computer-readable data format specified in Exhibit H. The specific length of each variable for computer-readable data transmission purposes is also given in Exhibit H. Information entered on these forms shall **not** exceed the size of the field given on the form, including such laboratory-generated items as lab name and lab sample identifier.

NOTE: The space provided for entries on the hardcopy forms (Section 4) is greater in some instances than the length prescribed for the variable as written to the electronic deliverable (see Exhibit H). Greater space is provided on the hardcopy forms for visual clarity.

3.2.2 When submitting data, the Contractor shall reproduce all characters that appear on the data reporting forms in Section 4. The format of the forms submitted shall be identical to that shown in the contract. No information may be added, deleted, or moved from its specified position without prior written approval from the Contract Laboratory Program Project Officer (CLP PO). The names of the various fields and compounds (e.g., "Lab Code," "Chloromethane") shall appear as they do on the forms in the contract. For items appearing on the uncompleted forms (Section 4), the use of uppercase and lowercase letters is optional.

3.2.3 Alphabetical entries made on the forms by the Contractor shall be in ALL UPPERCASE letters (e.g., "ABCDE", not "Abcde" or "abcde"). If an entry does not fill the entire blank space provided on the form, null characters shall be used to remove the remaining underscores that comprise the blank line. However, the Contractor shall not remove the underscores or vertical bars that delineate "boxes" on the forms. The only exception would be those underscores at the bottom of a "box" that are intended as a data entry line. (For instance, on Form 2LCV, line 30, if data is entered on line 30, it will replace the underscores.)

3.3 Header Information

Six pieces of information are common to the header section of each data reporting form: lab name, contract, lab code, Case number, Client number and Sample Delivery Group (SDG) number. Except as noted for Client number, this information shall be entered on every form and shall match on every form.

3.3.1 Lab Name. The lab name shall be the name chosen by the Contractor to identify its laboratory. It shall not exceed 25 characters.

3.3.2 Contract. Contract refers to the number of the USEPA contract under which the analyses were performed.

3.3.3 Lab Code. The lab code is an alphabetical abbreviation of up to six letters, as assigned by USEPA, to identify the laboratory and aid in data processing. This lab code will be assigned by USEPA at the time a contract is awarded, and shall not be modified by the Contractor, except at the direction of USEPA. If a change of name or ownership occurs at the laboratory, the lab code will remain the same until the Contractor is directed by USEPA to use another lab code.

3.3.4 Case Number. The Case number is the USEPA-assigned Case number associated with the sample. This number is reported on the Traffic Report (TR).

3.3.5 Client Number. The Client number is a unique number identifying the client and the project. This number may be the USEPA-assigned number for analyses performed under Non-Routine Analytical Services (NRAS). If samples are to be analyzed under NRAS only, and reported on these forms, then enter the NRAS number as "Client No." and leave the Case number blank. If samples are analyzed according to the Routine Analytical Services (RAS) protocol and have additional NRAS requirements, list both the Case number and NRAS number on all forms. If the analyses have no NRAS requirements, leave the "Client No." field blank.

NOTE: Some samples in an SDG may have a Client Number where as other may not.

3.3.6 SDG Number. The "SDG No." is the Sample Delivery Group (SDG) number. The SDG number is the EPA sample number of the first sample received in the SDG, except when this would cause duplication. When several samples are received together in the first SDG shipment, the SDG number shall be the lowest sample number (considering both alpha and numeric designations) in the first group of samples received under the SDG. If fractions of the same field samples are scheduled under different turnaround times, thus creating separate SDG's containing the same sample numbers, a different sample number shall be utilized in the assignment of the SDG number for each SDG. If a situation arises where there are an insufficient number of samples for assignment of SDG numbers the Contractor shall contact SMO for the assignment of an SDG number.

3.3.7 Sample Number. This number appears either in the upper right-hand corner of the form, or as the left column of a table summarizing data from a number of samples. When the EPA sample number is entered in the triple-spaced box in the upper right-hand corner of Form I, Form IV, or Form X, it should be entered on the middle line of the three lines that comprise the box.

3.3.7.1 The Contractor shall identify all samples, including dilutions and re-analyses, Laboratory Control Samples, requested Matrix Spike/Matrix Spike Duplicate(s) (MS/MSD) (as described in Section 3.3.7.4), blanks, and standards with an EPA sample number. For field samples, the EPA sample number is the five digit unique identifying number given in the TR that accompanied that sample. In order to facilitate data assessment, the Contractor shall use the following sample suffixes:

XXXXX	=	EPA sample number
XXXXXMS	=	Matrix spike sample
XXXXXMSD	=	Matrix spike duplicate sample
XXXXXRE	=	Re-extracted and re-analyzed sample
XXXXXDL	=	Sample analyzed at a dilution
XXXXXDL2	=	Sample analyzed at a secondary dilution
XXXXXDL3	=	Sample analyzed at a third dilution

NOTE: The Region may approve up to one additional dilution be performed beyond the one dilution for volatiles and semivolatiles and two dilutions for pesticides specified in Exhibit D. The approval of the additional dilution by the Region must be documented in the SDG Narrative and include the Telephone Record Conversation between SMO and the Contractor communicating USEPA's decision.

3.3.7.2 There may be instances when all samples analyzed must be listed on the form, regardless of whether or not they are part of the SDG being reported (e.g., Form VIII LCP). In these instances, use ZZZZZ as the EPA sample number for any sample analysis not associated with the SDG being reported.

3.3.7.3 For blanks, the Contractor shall use the following identification scheme for the EPA sample number:

- Volatile method blanks shall be identified as VBLK##;
- Volatile instrument blanks shall be identified as VIBLK##;
- Volatile storage blanks shall be identified as VHBLK##;
- Semivolatile method blanks shall be identified as SBLK##;
- Pesticide/Aroclor method blanks and/or sulfur cleanup blanks shall be identified as PBLK##; and
- Pesticide/Aroclor instrument blanks shall be identified as PIBLK##.

3.3.7.3.1 The EPA sample number shall be unique for each blank within an SDG. Within a fraction, the Contractor shall achieve this by replacing the two-character terminator (##) of the identifier with one or two characters or numbers, or a combination of both. For example, possible identifiers for volatile blanks would be VBLK1, VBLK2, VBLKA1, VBLKB2, VBLK10, VBLKAB, etc.

3.3.7.3.2 If the method blank is analyzed on multiple instruments, then an additional two-character suffix shall be added to make the blank EPA sample number unique.

3.3.7.4 The EPA sample number shall be unique for each Laboratory Control Sample within an SDG. The EPA sample number for a Laboratory Control Sample must be PLCS##.

Where:

P = fraction (P for pesticides/Aroclors)

LCS = indicates a Laboratory Control Sample

= suffix consisting of characters or numbers or both that makes the EPA sample number for the LCS unique in the SDG.

(1) = When reporting results on Form I, a "(1)" is appended on to the sample number to indicate that the results are from Gas Chromatograph (GC) column(1) [e.g., PLCS01(1)].

(2) = When reporting results on Form I, a "(2)" is appended on to the sample number to indicate that the results are from GC column(2) [e.g., PLCS01(2)].

3.3.7.5 Volatile and semivolatile standards shall be identified as FSTD***##.

Where:

F = Fraction code (V for volatiles; S for semivolatiles)

STD = Standard

*** = Concentration of volatile standards in µg/L (e.g., 0.5, 001, 005, 010, and 025) or the amount injected in ng for semivolatile standards (e.g., 005, 010, 020, 050, and 080)

= One or two characters, numbers, or combinations of both to create a unique EPA sample number within an SDG.

3.3.7.6 The Contractor shall use the following scheme to identify pesticide/Aroclor standards:

Name	EPA Sample Number
Individual Mix A (low point)	INDAL##
Individual Mix A (mid-point)	INDAM##
Individual Mix A (high point)	INDAH##
Individual Mix B (low point)	INDBL##
Individual Mix B (mid-point)	INDBM##
Individual Mix B (high point)	INDBH##
Resolution Check	RESC##
Performance Evaluation Mixture	PEM##
Toxaphene	TOXAPH##
Aroclor 1016	AR1016##
Aroclor 1221	AR1221##
Aroclor 1232	AR1232##
Aroclor 1242	AR1242##
Aroclor 1248	AR1248##

Name	EPA Sample Number
Aroclor 1254	AR1254##
Aroclor 1260	AR1260##
Aroclor 1016/1260 Mix	AR1660##

The Contractor shall replace the two-character terminator (##) of the identifier with one or two characters or numbers, or a combination of both, to create a unique EPA sample number within an SDG.

3.3.7.6.1 If the standards are injected onto both GC columns on the same instrument simultaneously, the same EPA sample number may be used for reporting data for the standards for both columns. If simultaneous injections are not made, then the same number shall not be used.

3.3.7.7 The EPA sample number for florisil shall be FLO#########, where ######### is the florisil cartridge lot number. If the florisil cartridge lot number is more than nine characters, truncate at the ninth character.

3.3.8 Other Common Fields. Several other pieces of information are common to many of the data reporting forms. These include purge volume/sample volume, lab sample identifier, lab file identifier, instrument ID, and page _ of _.

3.3.8.1 "Purge Volume" or "Sample Volume" is the total volume of water that was purged or extracted, in milliliters (mL).

3.3.8.2 The lab sample identifier is a unique laboratory-generated internal identifier pertaining to a particular analysis. The Contractor can enter up to 12 alpha-numeric characters in the "Lab Sample ID" field. The Contractor may use the EPA sample number as the lab sample identifier.

3.3.8.3 The lab file identifier is the unique laboratory-generated name of the GC/MS data system file containing information pertaining to a particular analysis. The Contractor can enter up to 14 alpha-numeric characters in the "Lab File ID" field.

3.3.8.4 The "Instrument ID" field is common to the forms containing calibration data. The identifier used by the Contractor shall include some indication of the manufacturer and/or model of the instrument, and shall contain additional characters that differentiate between all instruments of the same type in the laboratory.

3.3.8.5 The GC column identifier, and inner diameter are common to many of the reporting forms for the volatile and pesticide fractions. In addition, column length is entered on the volatile reporting forms. Under "GC Column", enter the column identification as denoted by the manufacturer. Enter the inner diameter in the "ID" field in millimeters (mm) (to two decimal places), and the column length in the "Length" field in m (in whole numbers).

3.3.8.6 Forms II, III, IV, V, VIII, IX, and X contain a field labeled "page _ of _" in the bottom lefthand corner. If the number of entries required on any of these forms exceeds the available space, continue entries on another copy of the same fraction-specific form, duplicating all header information. If a second page is required, number the pages consecutively (i.e.,

"page 1 of 2" and "page 2 of 2"). If a second page is not required, number the page "page 1 of 1."

NOTE: These forms are fraction-specific. For example, Form II LCV and Form II LCSV are for different data. Therefore, do not number the pages of all three versions of Form II as "1 of 6," "2 of 6," etc. Number only pages corresponding to the fraction-specific form.

3.3.9 Rounding Rule. For rounding off numbers to the appropriate level of precision, the Contractor shall follow these rules. If the figure following those to be retained is less than 5, drop it (round down). If the figure is greater than or equal to 5, drop it and increase the last digit to be retained by 1 (round up).

3.4 Organic Analysis Data Sheet (Form I, All Fractions)

3.4.1 Purpose. This form is used for tabulating and reporting sample analysis, including dilutions, re-analysis, blank, Laboratory Control Sample for target compounds and requested MS/MSD. If all fractions are not requested for analysis, only the pages for the fractions required shall be submitted. For example, if only volatiles analysis is requested, Form I LCV-1, LCV-2 and Form I LCV-TIC shall be submitted. If only the pesticide/Aroclor fraction is requested for analysis, Form I LCP shall be submitted. **Furthermore, pesticide instrument blanks (PIBLKs) shall be reported on a per column/per analysis basis on Form I LCP.** Each PIBLK shall be named with a unique EPA sample number. **Also, the Laboratory Control Sample and the MS/MSD shall be reported on a per column basis. Distinguish between GC column(1) and GC column(2) results by appending a suffix "(1)" for GC column(1) and "(2)" for GC column(2).**

3.4.2 Instructions. Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.4.2.1 Enter the date of sample receipt at the laboratory, as noted on the TR (i.e., the VTSR), in the "Date Received" field. The date shall be entered as MM/DD/YYYY.

3.4.2.2 Complete the "Date Extracted" and "Date Analyzed" fields in the same format (MM/DD/YYYY). For the continuous liquid-liquid extraction procedures, enter the date that the procedure was started in the "Date Extracted" field. If separatory funnel (pesticides only) was used, enter the date the procedure was completed in the "Date Extracted" field. For pesticide/Aroclor samples, enter the date of the first GC analysis performed in the "Date Analyzed" field. The date of sample receipt will be compared with the extraction and analysis dates of each fraction to ensure that contract holding times were not exceeded.

3.4.2.3 For volatiles on Form I LCV-1 and LCV-2, enter the GC column identifier in the "GC Column" field, the internal diameter in mm, to two decimal places in the "ID" field, and the length in meters (m), as a whole number, as described in Section 3.3.

3.4.2.4 For pesticides/Aroclors, enter the method of extraction in the "Extraction" field on Form I LCP as "SEPF" for separatory funnel, or "CONT" for continuous liquid-liquid extraction.

3.4.2.5 For semivolatiles and pesticides/Aroclors, enter the actual volume of the most concentrated sample extract, in microliters (µL), in the "Concentrated Extract Volume" field on Form I LCSV-1, LCSV-2 or LCP. For semivolatiles, this volume will typically be 1,000 µL. For pesticides/Aroclors, the volume of the most concentrated extract will typically be 2,000 µL. If a dilution of the sample extract is made in a subsequent analysis, this volume will remain the same, but the dilution factor will change.

3.4.2.6 For semivolatiles and pesticides/Aroclors, enter the volume of the sample extract injected into the GC in the "Injection Volume" field on Form I LCSV-1, LCSV-2 or LCP. Report this volume in microliters (µL) to one decimal place (e.g., 1.0 µL).

3.4.2.7 If pesticides/Aroclors are analyzed using two GC columns connected to a single injection port, enter the amount of half the volume in the syringe in the "Injection Volume" field (i.e., assume that the extract injected is evenly divided between the two columns).

3.4.2.8 If a sample or sample extract has been diluted for analysis, enter the dilution factor as a single number (e.g., enter 100.0 for a 1 to 100 dilution of the sample) in the "Dilution Factor" field. The dilution factor shall not be entered as a fraction. If a sample was not diluted, enter 1.0. Report dilution factors to one decimal place.

3.4.2.9 If sulfur cleanup is employed, enter Y in the "Sulfur Cleanup" field; if not, enter N on Form I LCP.

3.4.2.10 For positively identified target compounds, the Contractor shall report the concentrations as uncorrected for blank contaminants.

3.4.2.11 Report all analytical results to two significant figures.

3.4.2.12 Under the column labeled "Q" for qualifier, flag each result with the specific data reporting qualifiers listed below. When reporting results to USEPA, the Contractor shall use these contract-specific qualifiers. The Contractor shall not modify the qualifiers. Up to five qualifiers may be reported on Form I for each compound. The Contractor is encouraged to use additional flags or footnotes (see the X qualifier).

The USEPA-defined qualifiers to be used are:

U: This flag indicates the compound was analyzed for but not detected. The Contract Required Quantitation Limit (CRQL) shall be adjusted according to the equation listed in Exhibit D. CRQLs are listed in Exhibit C.

J: This flag indicates an estimated value. This flag is used (1) when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL but greater than zero, and (3) when the retention time data indicate the presence of a compound that meets the identification criteria for a pesticide and/or an Aroclor, and the result is less than the CRQL but greater than zero. For example, if the sample quantitation limit is 5.0 µg/L, but a concentration of 3.0 µg/L is calculated, report it as 3.0J.

NOTE: The J flag is not used and the compound is not reported as being identified for pesticide/Aroclor results less than the CRQL if the pesticide residue analysis expert determines that the peaks used for compound identification resulted from instrument noise or other interferences (column bleed, solvent contamination, etc.).

N: This flag indicates presumptive evidence of a compound. This flag is only used for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N flag is not used.

P: This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). **The lower of the two values is reported on Form I and flagged with a P.** The P flag is not used unless a compound is identified on both columns.

C: This flag is not used under this contract, but it is reserved for USEPA use.

B: This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates probable blank contamination and warns the data user to take appropriate action. This flag shall be used for a TIC as well as for a positively identified target compound.

The combination of flags BU or UB is expressly prohibited. Blank contaminants are flagged B only when they are detected in the sample.

E: This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis. If one or more compounds have a concentration greater than the upper level of the calibration range, the sample or extract shall be diluted and re-analyzed according to the specifications in Exhibit D; exceptions are also noted in Exhibit D. All such compounds with concentrations greater than the upper level of the calibration range shall have the concentrations flagged with an E on Form I for the original analysis. The results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have for the volatile and semivolatile dilutions "DL" or ("DL2", when this additional dilution was approved by the Region) and for the pesticides dilution "DL" or "DL2" (or "DL3", when approved by the Region) suffix appended to the sample number.

NOTE: For total xylenes, where three isomers are quantified as two peaks, the calibration range of <u>each peak</u> shall be considered separately. For example, a diluted analysis is <u>not</u> required for total xylenes unless the concentration of the peak representing the single isomer exceeds 25 µg/L or the peak representing the two co-eluting isomers on that GC column exceeds 50 µg/L.

D: This flag is used for all compounds identified in an analysis as diluted. If a sample or extract is re-analyzed with a dilution factor greater than 1, for example, when the concentration of the analyte exceeds the upper calibration range, the "DL", "DL2" or "DL3" suffix is appended to the sample number on Form I for the more diluted sample, and <u>all</u> reported

concentrations on that Form I are flagged with the D flag. This flag alerts data users that any discrepancies between the reported concentrations may be due to dilution of the sample or extract.

NOTE 1: The D flag is not applied to compounds which are not detected in the sample analysis, i.e., compounds reported with the CRQL and the U flag.

NOTE 2: Separate Form Is are required for reporting the original analysis (EPA Sample No. XXXXX) and the more diluted sample analyses, i.e., the results from these analyses cannot be combined on a single Form I.

A: This flag indicates that a Tentatively Identified Compound (TIC) is a suspected aldol-condensation product.

X:Other specific flags may be required to properly define the results. If used, the flags shall be fully described in the SDG Narrative. Begin by using X. If more than one flag is required, use Y and Z as needed. If more than five qualifiers are required for a sample result, use the X flag to represent a combination of several flags. For instance, the X flag might combine the B and D flags for some samples. The laboratory-defined flags are limited to X, Y, and Z.

3.5 Organic Analysis Data Sheet: Tentatively Identified Compounds (Form I LCV-TIC and Form I LCSV-TIC)

3.5.1 Purpose. These forms are used to report analysis results for non-target compounds (e.g., compounds not listed in Exhibit C), excluding deuterated monitoring compounds and internal standards. See Exhibit D for instructions on identification and quantitation. The Contractor shall submit Form I LCV-TIC or LCSV-TIC for every analysis, including required dilutions and re-analyses, and blanks, even if no TICs are found.

3.5.2 Instructions. Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions in addition to the instructions in Section 3.4.

3.5.2.1 Report all TICs including CAS number (if applicable), compound name, retention time, and the estimated concentration as uncorrected for blank contaminants. Report all analytical results to two significant figures. (Criteria for reporting TICs are given in Exhibit D, Section 11). Retention time shall be reported in minutes and decimal minutes, not seconds or minutes:seconds.

3.5.2.2 Total the number of TICs found, and enter this number in the "Number TICs found" field. If no TICs were found, enter 0 (zero).

3.5.2.3 If the name of a compound exceeds the 28 spaces in the TIC column, truncate the name to 28 characters. If the compound is an unknown, restrict the description to no more than 28 characters (e.g., unknown hydrocarbon).

3.6 Deuterated Monitoring Compound (DMC) Recovery (Form II LCV-1, LCV-2 and Form II LCSV-1, LCSV-2)

3.6.1 Purpose. For volatiles and semivolatiles, Form II LCV-1, LCV-2 and Form II LCSV-1, LCSV-2 are used to report the recoveries of the DMCs added to each volatile and semivolatile sample, including dilutions, re-analyses, blanks and requested MS/MSD. The DMCs are used to monitor the performance of the purge and trap for volatiles, the extraction and injection for semivolatiles, and the GC/MS system as a whole.

3.6.2 Instructions. Complete the header information according to the instructions in Section 3.3.

3.6.2.1 For each volatile DMC listed in Table 2 and each semivolatile DMC listed in Table 3, report the percent recovery to the nearest whole percentage point, and to the number of significant figures given by the QC limits at the bottom of the form.

Table 2
Volatile Deuterated Monitoring Compounds

Volatile Deuterated Monitoring Compounds		CAS Number
VDMC1	Vinyl Chloride-d3	6745-35-3
VDMC2	Chloroethane-d5	19199-91-8
VDMC3	1,1-Dichloroethene-d2	22280-73-5
VDMC4	2-Butanone-d5	24313-50-6
VDMC5	Chloroform-d	865-49-6
VDMC6	1,2-Dichloroethane-d4	17060-07-0
VDMC7	Benzene-d6	1076-43-3
VDMC8	1,2-Dichloropropane-d6	93952-08-0
VDMC9	Toluene-d8	2037-26-5
VDMC10	trans-1,3-Dichloropropene-d4	93951-86-1
VDMC11	2-Hexanone-d5	4840-82-8
VDMC12	Bromoform-d	2909-52-6
VDMC13	1,1,2,2-Tetrachloroethane-d2	33685-54-0
VDMC14	1,2-Dichlorobenzene-d4	2199-69-1

Table 3
Semivolatile Deuterated Monitoring Compounds

Semivolatile Deuterated Monitoring Compounds		CAS Number
SDMC1	Phenol-d5	4165-62-2
SDMC2	bis-(2-Chloroethyl)ether-d8	93952-02-4
SDMC2	2-Chlorophenol-d4	93951-73-6
SDMC4	4-Methylphenol-d8	190780-66-6
SDMC5	Nitrobenzene-d5	4165-60-0
SDMC6	2-Nitrophenol-d4	93951-78-1
SDMC7	2,4-Dichlorophenol-d3	93951-74-7
SDMC8	4-Chloroaniline-d4	191656-33-4
SDMC9	Dimethylphthalate-d6	85448-30-2
SDMC10	Acenaphthylene-d8	93951-97-4
SDMC11	4-Nitrophenol-d4	93951-79-2
SDMC12	Fluorene-d10	81103-79-9
SDMC13	4,6-Dinitro-methylphenol-d2	93951-76-9
SDMC14	Anthracene-d10	1719-06-8
SDMC15	Pyrene-d10	1718-52-1
SDMC16	Benzo(a)pyrene-d12	63466-71-7

3.6.2.2 Flag each DMC recovery outside the QC limits with an asterisk (*). The asterisk shall be placed in the last space in each appropriate column, under the "#" symbol.

3.6.2.3 In the "TOT OUT" column, total the number of DMC recoveries that were outside the QC limits for each sample. If no DMCs were outside the limits, enter 0 (zero).

3.6.2.4 If the sample is a dilution and the deuterated monitoring compounds (DMCs) are outside the acceptance window, enter the calculated recovery and flag the DMC recoveries with a D in the column under the “#” symbol. Do not include recoveries flagged with a D in the total number of recoveries for each sample outside the QC limits.

3.6.2.5 Number all pages as described in Section 3.3.

3.7 Surrogate Recovery (Form II LCP)

3.7.1 Purpose. Form II LCP is used to report the recoveries of the surrogate compounds added to each pesticide/Aroclor sample, blank, Laboratory Control Sample and requested MS/MSD.

3.7.2 Instructions. Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.7.2.1 For each surrogate listed in Table 4, report the percent recovery to the nearest whole percentage point.

3.7.2.2 Flag each surrogate recovery outside the QC limits with an asterisk (*). The asterisk shall be placed in the last space in each appropriate column, under the "#" symbol.

3.7.2.3 In the "TOT OUT" column, total the number of surrogate recoveries that were outside the QC limits for each sample. If no surrogates were outside the limits, enter 0 (zero).

3.7.2.4 If the samples is a dilution and the surrogates are outside the acceptance window in any analysis, enter the calculated recovery, and flag the surrogate recoveries with a D in the column under the "#" symbol. Do not include results flagged with a D in the total number of recoveries for each sample outside the QC limits.

3.7.2.5 The pesticide surrogate recoveries shall be reported from each GC column used for the analyses. Therefore, identify each GC column at the top of Form II LCP, entering the stationary phase in the "GC Column" field, and the internal diameter of the column in mm in the "ID" field.

3.7.2.6 The assignment of columns as "1" and "2" is left to the discretion of the Contractor when the analyses are performed by simultaneous injection into a GC containing two columns. If so analyzed, the assignment of "GC Column 1" and "GC Column 2" shall be consistent across all the reporting forms. If the analysis is not performed by simultaneous injection, then the assignment of GC column number shall be based on the chronological order of the two analyses.

3.7.2.7 Number all pages as described in Section 3.3.

Table 4
Pesticide Surrogates

Pesticide Surrogates	CAS Number
Decachlorobiphenyl (DCB)	2051-24-3
Tetrachloro-m-xylene (TCX)	877-09-8

3.8 Matrix Spike/Matrix Spike Duplicate Recovery (Form III, All Fractions, LCV, LCSV, LCP-1)

3.8.1 Matrix Spike/Matrix Spike Duplicate Recovery and Laboratory Control Sample Recovery

3.8.1.1 Purpose. This form is used to report the results of the analyses of MS/MSD. This form should only be submitted if the analysis of MS/MSD samples have been requested by the Region. Complete Form III LCP-1 for each GC column used for analysis.

3.8.1.2 Instructions. Complete the header information according to the instructions in Section 3.3. Include the EPA sample number for the matrix spike, **without** the suffixes MS or MSD. Complete the remainder of the form using the following instructions. For each

Form III LCP-1 enter the Instrument ID, the stationary phase in the “GC Column” field, and the internal diameter of the column in mm in the “ID” field. The order of reporting is not important but must be consistent with Form X.

3.8.1.2.1 In the first table under the "SPIKE ADDED" column, enter the amount of spike added in µg/L for each analyte.

3.8.1.2.2 Enter the sample concentration in the next column of each spike compound detected in the original sample. If a spike compound was not detected during the analysis of the original sample, enter the sample result as 0 (zero).

3.8.1.2.3 In the "MS CONCENTRATION" column, enter the actual concentration of each spike compound detected in the matrix spike aliquot.

3.8.1.2.4 Calculate the percent recovery of each spike compound in the matrix spike aliquot to the nearest whole percent, according to Exhibit D. Enter the percent recovery in the "MS % REC" column.

3.8.1.2.5 Flag all percent recoveries outside the QC limits with an asterisk (*). The asterisk shall be placed in the last space of the "MS % REC" column, under the "#" symbol.

3.8.1.2.6 Follow Sections 3.8.1.2.1 through 3.8.1.2.5 to complete the lower table, using the results of the analysis of the MSD aliquot.

3.8.1.2.7 Calculate the relative percent difference (RPD) between the matrix spike recovery and the matrix spike duplicate recovery, and enter this value in the "RPD" column. Report the RPD to the nearest whole percent.

3.8.1.2.8 Compare the RPDs to the QC limits given on the form, and flag each RPD outside the QC limits with an asterisk (*) in the last space of the "RPD" column, under the "#" symbol.

3.8.1.2.9 Summarize the values outside the QC limits at the bottom of the page. No further action is required by the Contractor.

3.8.2 Laboratory Control Sample Recovery (Form III LCP-2)

3.8.2.1 Purpose. Form III LCP-2 is used to report the results of the analyses of the Laboratory Control Samples.

3.8.2.2 Instructions. Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.8.2.2.1 If the LCS solution is purchased by the Contractor from a third party, report the identification number used by the third party to identify the LCS lot, if available. If the LCS solution was prepared in-house, leave this entry blank.

3.8.2.2.2 The "LCS Aliquot" is the volume in microliters (µL) of LCS spiking solution that was added to reagent water before extraction.

3.8.2.2.3 The LCS is reported for each GC column. Enter the Instrument ID, GC column, and internal diameter (ID) for both GC columns. The order of reporting is not important, but must be consistent with the information reported on Form X. If simultaneous injections are not made, the "Date Analyzed" is the earlier date of the two LCS analyses. The dates should be entered in MM/DD/YYYY format.

3.8.2.2.4 In the box (upper for Pesticides) in Form III, under "AMOUNT ADDED", enter the amount in nanograms (ng) of each analyte added to the sample. Under "AMOUNT RECOVERED", enter the amount in ng of each analyte in the sample calculated from analysis. Calculate the percent recovery of each compound in the sample to the nearest whole percent, according to Exhibit D, and enter under "% REC". Flag all percent recoveries which do not meet the contract requirements with an asterisk (*). The asterisk must be placed in the last space of the percent recovery column, under the "#" symbol.

3.8.2.2.5 Complete the lower box according to the instructions in Section 3.8.2.2.4.

3.8.2.2.6 Summarize the values outside the QC limits at the bottom of the page.

NOTE: This means the results for both columns.

3.9 Method Blank Summary (Form IV, All Fractions)

3.9.1 Purpose. This form summarizes the samples associated with each method blank analysis. The Contractor shall submit the appropriate Form IV for each blank.

3.9.2 Instructions. Complete the header information according to the instructions in Section 3.3. The EPA sample number entered in the upper right-hand corner shall be the same number entered on Form I for the blank. Complete the remainder of the form using the following instructions.

3.9.2.1 Complete the following fields: "Instrument ID", "Date Analyzed", and "Time Analyzed". Dates shall be entered as MM/DD/YYYY. The time shall be reported in military time.

3.9.2.2 Pesticide/Aroclor contaminants shall meet the identification criteria requiring analysis of the blank on two different GC columns (see Exhibit D PEST). Enter the date, time, and instrument ID of both analyses of the blank on the pesticide method blank summary (Form IV LCP). The information on the two analyses is differentiated as Date Analyzed (1), Date Analyzed (2), etc. If the analyses were run simultaneously, the order of reporting is not important, but shall be consistent with the information reported on all other pesticide forms. Otherwise, Date Analyzed (1) shall indicate the analysis on column 1, and Date Analyzed (2) shall indicate the analysis on column 2.

3.9.2.3 For pesticide/Aroclor blanks, enter the method of extraction as “SEPF” for separatory funnel, or “CONT” for continuous liquid-liquid extraction on Form IV LCP.

3.9.2.4 Identify the GC column, internal diameter, and length in the appropriate fields, as indicated in Section 3.3.

3.9.2.5 For semivolatile and pesticide/Aroclor method blanks, enter the date of extraction of the blank on Form IV LCSV or LCP.

3.9.2.6 If the samples associated with pesticide/Aroclor blank are subjected to sulfur cleanup, then the blank shall also be subjected to sulfur cleanup. If sulfur cleanup is employed, enter Y in the "Sulfur Cleanup" field; if not, enter N on Form IV LCP. If only some of the samples associated with the method blank are subjected to sulfur cleanup, a separate sulfur cleanup blank is required (see Exhibit D PEST). If a separate sulfur cleanup blank is prepared, complete one version of Form IV associating all the samples with the method blank, and a second version of Form IV listing only those samples associated with the separate sulfur cleanup blank.

NOTE: Subjecting all samples associated with a method blank to sulfur cleanup avoids the need for two forms.

3.9.2.7 For all three fractions, as appropriate, summarize the samples associated with a given method blank in the table, entering the EPA sample number and lab sample identifier. For volatiles, enter the lab file identifier and the time of analysis of each sample. For semivolatiles, enter the lab file identifier and date of analysis. For pesticides/Aroclors, enter the dates of both analyses as Date Analyzed (1) and Date Analyzed (2), as discussed previously.

3.9.2.8 Number all pages as described in Section 3.3.

3.10 GC/MS Instrument Performance Check (Form V LCV and Form V LCSV)

3.10.1 Purpose. This form is used to report the results of the GC/MS instrument performance check for the volatile and semivolatile fractions and to summarize the date and time of analyses of samples, including dilutions and re-analyses, standards, blanks, and requested MS/MSD associated with each analysis of the instrument performance check solution.

3.10.2 Instructions. Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.10.2.1 Enter the date and time of injection of the instrument performance check solution (BFB for volatiles--CAS Number 460004, DFTPP for semivolatiles--CAS Number 5074715). The date shall be entered as MM/DD/YYYY. The time shall be reported as military time.

3.10.2.2 For volatiles, identify the GC column, internal diameter, and column length on Form V LCV, as described in Section 3.3.

3.10.2.3 For each ion listed on the form, enter the percent relative abundance in the right-hand column of the first table. Report relative abundances to the number of significant figures given for each ion in the ion abundance criteria column.

NOTE: For both BFB and DFTPP, one or more of the high mass ions may exceed the abundance of the ion listed on the form as the nominal base peak, m/z 95 for BFB and m/z 198 for DFTPP. Despite this possibility, all ion abundances shall be normalized to the nominal base peaks listed on Form V (see Exhibits D).

3.10.2.4 All relative abundances shall be reported as a number. If the relative abundance is zero, enter 0 (zero), not a dash or other non-numeric character. Where parentheses appear, compute the percentage of the ion abundance of the mass given in the appropriate footnote, and enter that value in the parentheses.

3.10.2.5 In the lower table, list all samples, including dilutions, re-analyses, standards, blanks and requested MS/MSD analyzed under that instrument performance check in chronological order, by time of analysis (in military time). Refer to Section 3.3.7 for specific instructions for identifying standards and blanks.

3.10.2.6 Complete the following fields for all standards, samples, including dilutions, re-analyses, and blanks: "EPA Sample No.", "Lab Sample ID", "Lab File ID", "Date Analyzed", and "Time Analyzed".

3.10.2.7 Number all pages as described in Section 3.3.

3.11 GC/MS Initial Calibration Data (Form VI LCV-1, LCV-2, LCV-3 and Form VI LCSV-1, LCSV-2, LCSV-3)

3.11.1 Purpose. After a GC/MS system has undergone an initial five-point calibration at the specific concentration levels described in Exhibit D, and after all initial calibration criteria have been met, the Contractor shall complete and submit this form for each volatile or semivolatile target compound initial calibration performed which is relevant to the samples, including dilutions, re-analyses, and blanks in the SDG, regardless of when that calibration was performed.

3.11.2 Instructions. Complete the header information according to the instructions in Section 3.3. Enter the Case number and SDG number for the current data package, regardless of the original Case for which the initial calibration was performed. Complete the remainder of the form using the following instructions.

3.11.2.1 Enter the date(s) of the calibration. If the calendar date changes during the calibration procedure, the inclusive dates shall be recorded. Dates shall be entered as MM/DD/YYYY.

3.11.2.2 Enter the injection times of the first and last of the standards analyzed in the "Calibration Times" field. Times shall be reported in military time.

3.11.2.3 Enter the lab file identifier for each of the five calibration standards injected. Complete the response factor data for the five calibration points, and then calculate and report the average Relative Response Factor (RRF) for all target compounds.

3.11.2.4 For volatiles and semivolatiles, report the RRFs for the deuterated monitoring compounds in the calibration standards. The Contractor shall report the Relative Standard Deviation (%RSD) for <u>all</u> compounds. See Exhibit D for equations.

3.12 GC/EC Initial Calibration Data (Form VI LCP-1, LCP-2, LCP-3)

3.12.1 Purpose. The initial calibration of pesticides/Aroclors involves the determination of retention times, retention time windows, and calibration factors. For single component pesticide target compounds, these data are calculated from the analyses of the Individual Standard Mixtures A and B at three different concentration

levels. For the multicomponent target compounds, these data are calculated from a single point calibration.

3.12.2 Instructions. Complete one Form VI for each GC column used for the three analyses of Individual Standard Mixture A (low-point, mid-point, and high-point) and the three analyses of Individual Standard Mixture B during an initial calibration. Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.12.2.1 In the "Level (x low)" field, enter the concentration of the low-point, mid-point, and high-point calibration standards as a multiplier of the low-point. Therefore, for the low-point, enter "1.0." The concentration of the mid-point standard is specified in Exhibit D as four times the low-point; therefore, enter "4.0." The high-point standard shall be at least 16 times the low-point, but may be higher, if that value lies within the linear range of the instrument, as specified in Exhibit D. Therefore, enter the appropriate multiplier to the high-point standard concentration to one decimal place.

3.12.2.2 Identify the GC column and internal diameter (in mm) in the appropriate fields.

3.12.2.3 Enter the dates of analysis of the first and last of the six standards on each form in the "Date(s) Analyzed" field. Dates shall be entered as MM/DD/YYYY.

3.12.2.4 For each standard analyzed, enter the retention time of each applicable analyte in minutes and decimal minutes, under the appropriate concentration level in the "RT OF STANDARDS" column on Form VI LCP-1.

3.12.2.5 Calculate the mean retention time of each analyte from the three individual mixtures, and report it in the "MEAN RT" column on Form VI LCP-1.

3.12.2.6 Calculate the retention time window for each analyte using the specifications in Exhibit D, and enter the lower limit of the window in the "RT WINDOW" column under "FROM," and the upper limit of the window under "TO" on Form VI LCP-1. The retention times of the surrogates are reported from the analyses of Individual Mixture A and the windows are only required to be calculated for Individual Mixture A.

3.12.2.7 For the six analyses of the Individual Standard Mixtures, the Contractor shall also complete the calibration factor data on Form VI LCP-2. Prepare one form for each instrument and GC column used. Enter the calibration factor for each compound in each of the standards. Calculate and enter a mean calibration factor and a relative standard deviation (%RSD). As with surrogate retention times, the surrogate calibration factors are only required from Individual Mixture A analyses.

3.12.2.8 For the multicomponent target compounds, the retention times, retention time windows, and calibration factors shall be reported in a similar fashion for each single point calibration standard. For each multicomponent compound, the Contractor shall select at least three peaks from each analyte, according to the specifications in Exhibit D. The retention time and calibration factor data apply to each peak. Complete one version of Form VI

LCP-3 for each GC column, for each initial calibration that applies to samples in the data package.

3.12.3 Form VI (LCP-4) is also used to report the results of analysis of the Resolution Check Solution that shall begin each pesticide/Aroclor initial calibration sequence. The Contractor shall submit one Form VI LCP-4 for both GC columns.

3.12.3.1 Complete the header information as described in Section 3.3. Using the same assignment of first and second GC columns made for Form IV, enter the GC column identifier, internal diameter, and date and time of analysis. Enter the EPA sample number for the Resolution Check Standard. If simultaneous injections on a single GC are used, the EPA sample number may be the same for both Resolution Check Standards. If simultaneous injections are not used, use different suffixes to identify the standards. Complete the remainder of the form using the following instructions.

3.12.3.2 List each analyte, in retention time order, including both surrogate compounds. Thus, the order of analytes in the two boxes on this form will be different due to the dissimilarity of the stationary phases of the two GC columns used. Enter the name of each target analyte in the Resolution Check Mixture as it appears on Form I LCP. Spell out the names of the surrogates as they appear on Form II LCP-2.

3.12.3.3 Enter the retention time of each analyte from the analysis in the "RT" column.

3.12.3.4 Calculate the resolution between each pair of analytes. Enter the resolution between the first and second peaks on the line for the first analyte listed in the box. Enter the resolution between the second and third peaks on the line for the second analyte, and so on, until the resolutions of all possible pairs of adjacent analytes have been entered.

NOTE: Only eight of the nine resolution fields will be filled.

3.12.4 Form VI (LCP-5, LCP-6 and LCP-7 for each PEM, initial mid-level calibration mixture A, and initial mid-level calibration mixture B, respectively) shall be used to report the percent resolution between each pair of analytes according to the definition in Exhibit D Pesticides and Aroclors.

NOTE: These forms shall also be used to report all percent resolution data for the PEM and midpoint concentration Individual Mixtures A and B analyzed as part of calibration verification (Exhibit D/PEST, Section 9.3).

3.12.4.1 Complete the header information as described in Section 3.3. Using the same assignment of first and second GC columns made for Form IV, enter the GC column identifier, internal diameter, and date and time of analysis. Enter the EPA sample number for the respective standards. If simultaneous injections are not used, use different suffixes to identify the standards. Complete the remainder of the form using the following instructions.

3.12.4.2 List each analyte, in retention time order, including both surrogate compounds. Thus, the order of analytes in the two boxes on this form will be different due to the dissimilarity of the stationary phases of the two GC columns used. Enter the name of

each target analyte in the standard as it appears on Form I LCP. Spell out the names of the surrogates as they appear on Form II LCP-2.

3.12.4.3 Enter the retention time of each analyte from the analysis in the "RT" column.

3.12.4.4 Calculate the resolution between each pair of analytes. Enter the resolution between the first and second peaks on the line for the first analyte listed in the box. Enter the resolution between the second and third peaks on the line for the second analyte, and so on, until the resolutions of all possible pairs of adjacent analytes have been entered.

NOTE: The last resolution field will be left blank in each table.

3.13 GC/MS Continuing Calibration Data (Form VII LCV-1, LCV-2, LCV-3 and Form VII LCSV-1, LCSV-2, LCSV-3)

3.13.1 Purpose. For volatiles and semivolatiles, this form is used to report the calibration of the GC/MS system by the analysis of specific calibration standards. Form VII is required for each 12-hour time period for both volatile and semivolatile target compound analyses. The Contractor shall analyze calibration standards and meet all criteria outlined in Exhibit D for the minimum Relative Response Factors (RRF)and maximum percent difference between initial and continuing calibrations.

3.13.2 Instructions. Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.13.2.1 Enter the date and time of the continuing calibration and the dates and times of the initial calibration (give inclusive dates if the initial calibration is performed over more than one date). Dates shall be entered as MM/DD/YYYY. Times shall be reported in military time.

3.13.2.2 Using the appropriate initial calibration (volatile or semivolatile), enter the average RRF for each target compound and each deuterated monitoring compound for volatiles and semivolatiles.

3.13.2.3 Report the RRF (RRF5 for Volatiles and RRF20 for Semivolatiles) from the continuing calibration standard analysis.

3.13.2.4 Calculate the percent difference (%D) for all compounds. See Exhibit D for equation. If the %D is greater than 999.9, report as 999.9. If the %D is less than -99.9, report as -99.9.

3.14 GC/ECD Calibration Verification Summary (Form VII, LCP-1, LCP-2)

3.14.1 Purpose. Form VII is used to report the results of the Performance Evaluation Mixtures (PEMs) and the mid-point concentrations of Individual Standard Mixtures A and B that, along with the PEM, bracket each 12-hour period of sample analyses. The Contractor shall submit Form VII LCP-1 for each 12-hour sequence analyzed. Form VII LCP-2 shall be completed each time the Individual Standard Mixtures are analyzed, for each GC column used.

3.14.2 Instructions. Complete Form VII LCP-1 and LCP-2 for each standard reported on Form VIII LCP. Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

FORM VII LCP-1

3.14.2.1 Enter the date(s) of the initial calibration(s). Give inclusive dates if the initial calibration is performed over more than one day. Dates shall be entered as MM/DD/YYYY.

3.14.2.2 Identify the GC column and internal diameter in the appropriate fields.

3.14.2.3 On Form VII LCP-1, enter the EPA sample number, lab sample identifier and date and time of analysis for the instrument blank that preceded the 12-hour sequence (PIBLK). For the PEM that initiated or terminated the 12-hour sequence (PEM), enter the EPA sample number, lab sample identifier, and date and time of analysis.

3.14.2.4 When reporting data for the PEM at the beginning of the initial calibration sequence, leave the "EPA Sample No.", "Lab Sample ID", "Date Analyzed", and "Time Analyzed" fields blank for the instrument blank (PIBLK), when no instrument blank is analyzed before the PEM. When reporting all other PEM analyses, the instrument blank fields shall be completed.

3.14.2.5 In the table, report the retention time for each analyte in the PEM as well as the retention time windows.

3.14.2.6 For each analyte in the PEM, enter the amount of the analyte found in the PEM, in ng to three decimal places, in the "CALC AMOUNT" column.

3.14.2.7 Enter the nominal amount (amount added) of each analyte in the PEM in ng to three decimal places in the "NOM AMOUNT" column.

3.14.2.8 Calculate the percent difference between the calculated amount and nominal amount for each analyte according to Exhibit D. Report the values in the "%D" column. If the %D is greater than 999.9, report as 999.9. If the %D is less than -99.9, report as -99.9.

3.14.2.9 Calculate the percent breakdown for endrin and 4,4'-DDT and the combined percent breakdown in the PEM according to Exhibit D. Enter the values for the breakdown of endrin and 4,4'-DDT in their respective fields immediately under the table.

FORM VII LCP-2

3.14.2.10 The upper table on Form VII LCP-2 contains the retention time and amount data for Individual Standard Mixture A compounds. The lower table contains the data for Mixture B. Complete the form using the instructions in Sections 3.14.2.1 through 3.14.2.8 for Form VII LCP-1.

3.15 Internal Standard Area and RT Summary (Form VIII LCV and Form VIII LCSV-1, LCSV-2)

3.15.1 Purpose. This form is used to summarize the peak areas and retention times of the internal standards added to the initial calibration

standards, continuing calibration standards and all volatile and semivolatile samples, including dilutions, re-analyses, and blanks. The data are used to determine when changes in internal standard responses will adversely affect quantitation of target compounds. This form shall be completed each time an initial calibration and continuing calibration is performed, or when samples are analyzed under the same GC/MS instrument performance check as an initial calibration.

3.15.2 Instructions. Complete the header information according to Section 3.3. Complete the remainder of the form using the following instructions. If samples are analyzed immediately following an initial calibration, before another instrument performance check and a continuing calibration, Form VIII shall be completed on the basis of the internal standard areas of the 5 µg/L initial calibration standard for volatiles, and the 20 ng initial calibration standard for semivolatiles. Use the date and time of analysis of this standard and the lab file identifier and areas in place of those of a continuing calibration standard.

3.15.2.1 Enter the date and time of analysis of the continuing calibration standard. The date shall be entered as MM/DD/YYYY. The time shall be reported in military time.

3.15.2.2 For volatiles, enter the GC column identifier, internal diameter, and length as directed in Section 3.3.

3.15.2.3 From the results of the analysis of the continuing calibration standard, enter the area measured for each internal standard and its retention time (in decimal minutes) under the appropriate column in the "12 HOUR STD" row.

3.15.2.4 For each internal standard listed in Tables 5 and 6, calculate the upper limit of the area and the lower limit of the area from the internal standard area. For FORM VIII LCV, calculate the upper limit of the area as the area of the particular internal standard plus 40 percent of its area (i.e., 1.4 times the area in the "12 HOUR STD" field), and the lower limit of the area as the area of the internal standard minus 40 percent of its area (i.e., 0.6 times the area in the "12 HOUR STD" field). For FORMS VIII LCSV-1 and VIII LCSV-2, calculate the upper limit of the area as the area of the particular internal standard plus 100 percent of its area (i.e., two times the area in the "12 HOUR STD" field), and the lower limit of the area as the area of the internal standard minus 50 percent of its area (i.e., 0.5 times the area in the "12 HOUR STD" field). Report these values in the "UPPER LIMIT" and "LOWER LIMIT" rows, respectively. Calculate the upper limit of the retention time and the lower limit of the retention time. The upper limit of the retention time is calculated by adding 0.33 minutes to the retention time of the internal standard and the lower limit of the retention time is the retention time of the internal standard minus 0.33 minutes. Report these values in the "UPPER LIMIT" and "LOWER LIMIT" rows in the applicable RT columns.

3.15.2.5 For each sample, including dilutions, re-analyses, blanks, and requested MS/MSD analyzed under a given continuing calibration, enter the EPA sample number and the area measured for each internal standard and its retention time. If the internal standard area is outside the upper or lower limits calculated in Section 3.15.2.4, flag that area with an asterisk (*). The asterisk shall be placed in the far right-hand space of the box

for each internal standard area, directly under the "#" symbol. Similarly, flag the retention time of any internal standard that is outside the limits with an asterisk.

3.15.2.6 Number all pages as described in Section 3.3.

Table 5
Volatile Internal Standards

Volatile Internal Standards	CAS Number
IS1: Chlorobenzene-d5 (CBZ)	3114-55-4
IS2: 1,4-Difluorobenzene (DFB)	540-36-3
IS3: 1,4-Dichlorobenzene-d4 (DCB)	3855-82-1

Table 6
Semivolatile Internal Standards

Semivolatile Internal Standards	CAS Number
IS1: 1,4-Dichlorobenzene-d4 (DCB)	3855-82-1
IS2: Naphthalene-d8 (NPT)	1146-65-2
IS3: Acenaphthene-d10 (ANT)	15067-26-2
IS4: Phenanthrene-d10 (PHN)	1517-22-2
IS5: Chrysene-d12 (CRY)	1719-03-5
IS6: Perylene-d12 (PRY)	1520-96-3

3.16 Pesticide Analytical Sequence (Form VIII LCP)

3.16.1 Purpose. This form is used to report the analytical sequence for pesticide analysis. At least one form is required for each GC column used for pesticide/Aroclor analyses.

3.16.2 Instructions. Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.16.2.1 Enter the date(s) of the initial calibration. Give inclusive dates if the initial calibration is performed over more than one day. Dates shall be entered as MM/DD/YYYY.

3.16.2.2 Identify the GC column and internal diameter in the appropriate fields.

3.16.2.3 At the top of the table, report the mean retention time for tetrachloro-m-xylene (TCX) and decachlorobiphenyl (DCB) calculated from the initial calibration sequence (from INDA).

3.16.2.4 For every analysis associated with a particular analytical sequence starting with the initial calibration, enter the EPA sample number, lab sample identifier, and date and time of analysis. Each sample analyzed as part of the sequence shall be reported on Form VIII LCP <u>even</u> if it is not associated with the SDG. The Contractor shall use ZZZZZ as the EPA sample number to

distinguish all samples that are not part of the SDG being reported.

3.16.2.5 Report the retention time of the surrogates for each analysis in the "TCX RT" and "DCB RT" columns. All sample analyses shall be bracketed by acceptable analyses of instrument blanks, a PEM, and Individual Standard Mixtures A and B. Given the fact that the initial calibration may remain valid for some time (Exhibit D), it is only necessary to report the data from 12-hour periods when samples, dilutions, re-analyses, Laboratory Control Samples, requested MS/MSD, blanks, or multicomponent standard analytes for the 72-hour confirmation requirement in an SDG were analyzed. The Contractor shall submit Form VIII for the initial calibration sequence and forms that include the PEMs and Individual Standard Mixtures that bracket <u>any</u> and <u>all</u> samples in the SDG. While the data for time periods between the initial calibration and samples in the SDG are not a routine deliverable, the data shall be available as requested (e.g., at on-site evaluations). Non-USEPA samples shall be numbered ZZZZZ.

3.16.2.6 Flag all those values which do not meet the contract requirements by entering an asterisk (*) in the "RT" column, under the "#" symbol. If the retention time cannot be calculated due to interfering peaks, leave the "RT" column blank for that surrogate, enter an asterisk in the last column, and document the problem in the SDG Narrative.

3.16.2.7 If more than a single copy of Form VIII LCP is required, enter the same header information on all subsequent pages for that GC column and instrument, and number each page as described in Section 3.3.

3.17 Pesticide Cleanup Summary (Form IX, LCP)

3.17.1 Purpose. Form IX LCP is used to report the results of the check of the Florisil cartridges used to process all sample extracts and to associate the lot of cartridges with particular sample results so that problems with a particular cartridge lot may be tracked across all associated samples.

3.17.2 Instructions. Complete the header information according to the instructions in Section 3.3. Enter the Case number and SDG number for the current data package, regardless of the original Case for which the cartridge check was performed. Complete the remainder of the form using the following instructions.

3.17.2.1 Enter the Florisil cartridge lot number.

3.17.2.2 Enter the date the Florisil cartridge check solution was analyzed in the "Date of Analysis" field. The date shall be entered as MM/DD/YYYY.

3.17.2.3 Complete the "GC Column" and "ID" fields for the two GC columns used to analyze the samples, including blanks, re-analyses, Laboratory Control Samples, and requested MS/MSD. Report all results from either GC Column 1 or GC Column 2.

3.17.2.4 In the first table, enter the amount of spike added and spike recovered in ng for each analyte.

3.17.2.5 Calculate the percent recovery to the nearest whole percent, and enter the number in the "% REC" field. Flag each spike recovery

outside the QC limits (shown on the form) with an asterisk (*). The asterisk shall be placed in the last space in the "% REC" column, under the "#" symbol.

3.17.2.6 In the second table, complete the "EPA Sample No.," the "Lab Sample ID," and "Date Analyzed" fields for each sample and blank that were cleaned up using this lot of Florisil cartridges.

3.17.2.7 Number the pages as described in Section 3.3.

3.18 Pesticide/Aroclor Identification (Form X, LCP-1, LCP-2)

3.18.1 Purpose. This form summarizes the quantitations of all target pesticides/Aroclors detected in a given sample. It reports the retention times of the compound on both columns on which it was analyzed, as well as the retention time windows of the standard for that compound on both of these columns. In addition, it is used to report the concentration determined from each GC column, and the percent difference between the two quantitative results. Separate forms are used for single component analytes and multicomponent analytes.

Form X is required for each sample, including dilutions, re-analyses, blanks, Laboratory Control Samples and requested MS/MSD in which compounds listed in Exhibit C (Pesticides/Aroclors) are reported on Form I. **Do not generate a Form X for pesticide instrument blanks.**

3.18.2 Instructions. Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.18.2.1 Enter the date(s) of analysis. Dates shall be entered as MM/DD/YYYY.

3.18.2.2 Enter the GC column and internal diameter for each of the two columns.

3.18.2.3 For each single component pesticide positively identified, enter the name of the compound in the "ANALYTE" column as it appears on Form I.

3.18.2.4 Enter the retention times on each column of the compounds detected in the sample next to the appropriate column designation (1 or 2).

3.18.2.5 Enter the retention time windows on each column from the initial calibration standard. These data shall correspond with those on Form VI and shall be entered in a similar manner. The lower value is entered under the "FROM" column, the upper value under the "TO" column.

3.18.2.6 Enter the concentration calculated from each GC column under the "CONCENTRATION" column. Although the units are the same as those used on Form I, do <u>not</u> enter any units on Form X.

3.18.2.7 Calculate the percent difference between the concentrations entered on this form, using the equation found in Exhibit D, and report it to a tenth of a percent in the "%D" column. If %D is greater that 999.9, report it as 999.9.

3.18.2.8 The <u>lower</u> of the two concentrations is reported on Form I for each pesticide compound. The lower concentration is used because, if

present, coeluting interferences are likely to increase the calculated concentration of any target compound. If the percent difference between the calculated concentrations is greater than 25.0 percent, flag the concentration on Form I, as described previously. This will alert the data user to the potential problems in quantitating this analyte.

3.18.2.9 If more pesticide compounds are identified in an individual sample than can be reported on one Form X, complete as many additional copies of Form X as necessary, duplicating all header information and numbering the pages as described in Section 3.3.

3.18.2.10 Report multicomponent analytes detected in samples on Form X LCP-2. Complete the header information and GC column fields as described above. For multicomponent analytes, it is necessary to report the retention time and concentration of each peak chosen for quantitation in the target analyte in a fashion similar to that for single component pesticides. The concentrations of all peaks quantitated (three are required, up to five may be used) are averaged to determine the mean concentration. Report the lower of the two mean concentrations on Form I. Flag this value if the mean concentrations from the two GC columns differ by more than 25 percent, as described previously.

3.18.2.11 If more multicomponent compounds are identified in an individual sample than can be reported on one Form X, complete as many additional copies of Form X as necessary, duplicating all header information and numbering the pages as described in Section 3.3.

3.19 Sample Log-In Sheet (Form DC-1)

3.19.1 Purpose. This form is used to document the receipt and inspection of sample containers and samples. One original of Form DC-1 is required for each sample shipping container (only the hardcopy form is required). If the samples in a single sample shipping container are assigned to more than one SDG, the original Form DC-1 shall be placed with the deliverables for the SDG of the lowest alpha-numeric number, and a copy of Form DC-1 shall be placed with the deliverables for the other SDGs. The copies shall be identified as "copy(ies)", and the location of the original shall be noted on the copies.

3.19.2 Instructions

3.19.2.1 Sign and date the airbill. (If an airbill is not received, include a hardcopy receipt requested from the shipping company or a printout of the shipping company’s electronic tracking information).

3.19.2.2 Complete the header information on the form, including the log-in date.

3.19.2.3 Examine the shipping container and record the presence/absence of custody seals and their condition (e.g., intact, broken) in item 1.

3.19.2.4 Record the custody seal numbers in item 2.

3.19.2.5 Open the container, remove the enclosed sample documentation, and record the presence/absence of chain-of-custody record(s), SMO forms (e.g., TRs, Packing Lists), and airbills or airbill stickers in items 3-5. Specify if there is an airbill present or an

airbill sticker in item 5. Record the airbill or sticker number in item 6.

3.19.2.6 Remove the samples from the shipping container(s), examine the samples and the sample tags (if present), and record the condition of the sample bottles (e.g., intact, broken, leaking) and presence or absence of sample tags in items 7 and 8.

3.19.2.7 Record the presence of the cooler temperature indicator bottle in item 9 and cooler temperature in item 10.

3.19.2.8 Review the sample shipping documents and compare the information recorded on all the documents and samples and circle the appropriate answer in item 11.

3.19.2.9 Record the date and time of cooler receipt at the laboratory in items 12 and 13.

3.19.2.10 If there are no problems observed during receipt, sign and date (include the time) Form DC-1, the Chain-of-Custody record, and the TR, and write the sample numbers on Form DC-1 in the "EPA Sample #" column.

3.19.2.11 Record the appropriate sample tags and assigned laboratory numbers, if applicable.

3.19.2.12 Any comments should be made in the "Remarks" column.

3.19.2.13 Record the fraction designation (if appropriate) and the specific area designation (e.g., refrigerator number) in the "Sample Transfer" block. Sign and date the "Sample Transfer" block.

3.19.2.14 Cross out unused columns and spaces. Initial and date all cross outs.

3.19.2.15 If there are problems observed during receipt or an answer marked with an asterisk (e.g., "absent*") was circled, contact SMO and document the contact as well as resolution of the problem on a CLP Communication Log. Following resolution, sign and date the forms and note, where appropriate, the resolution of the problem.

3.20 Complete SDG File (CSF) Inventory Sheet (Form DC-2)

3.20.1 Purpose. Form DC-2 is used to record both the CSF documents and the number of documents in the original Sample Data Package sent to the USEPA Region.

3.20.2 Instructions

3.20.2.1 Organize all USEPA CSF documents as described in Section 2.6. Assemble the documents in the order specified on Form DC-2 and Section 2.6, and stamp each page with a consecutive number; however, do not number Form DC-2. Inventory the CSF by reviewing the document numbers and recording page number ranges in the columns provided on Form DC-2. The Contractor shall verify and record in the "Comments" section on Form DC-2 all intentional gaps in the page numbering sequence (e.g., "page numbers not used, XXXX - XXXX, YYYY - YYYY. If there are no documents for a specific document type, enter an "NA" in the empty space.

3.20.2.2 Certain laboratory-specific documents related to the CSF may not fit into a clearly defined category. The Contractor shall review Form DC-2 to determine if it is most appropriate to place them under categories 7, 8, 9, or 10. Category 10 should be used if there is no appropriate previous category. These types of documents should be described or listed in the blanks under each appropriate category on Form DC-2.

3.20.2.3 If it is necessary to insert new or inadvertently omitted documents, the Contractor shall identify the documents with unique accountable numbers and record the unique accountable numbers and the locations of the documents in the CSF (in the "Other Records" section on Form DC-2).

4.0 DATA REPORTING FORMS

The data reporting forms are shown on the following pages.

1LCA
LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ Date Received: _____

Lab File ID: _____ Date Analyzed: _____

Purge Volume: _____(ML) Dilution Factor: _____

GC Column: _____ ID: _____(MM) Length: _____(M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane		
74-87-3	Chloromethane		
75-01-4	Vinyl Chloride		
74-83-9	Bromomethane		
75-00-3	Chloroethane		
75-69-4	Trichlorofluoromethane		
75-35-4	1,1-Dichloroethene		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane		
67-64-1	Acetone		
75-15-0	Carbon Disulfide		
79-20-9	Methyl Acetate		
75-09-2	Methylene Chloride		
156-60-5	trans-1,2-Dichloroethene		
1634-04-4	Methyl tert-Butyl Ether		
75-34-3	1,1-Dichloroethane		
156-59-2	cis-1,2-Dichloroethene		
78-93-3	2-Butanone		
74-97-5	Bromochloromethane		
67-66-3	Chloroform		
71-55-6	1,1,1-Trichloroethane		
110-82-7	Cyclohexane		
56-23-5	Carbon Tetrachloride		
71-43-2	Benzene		
107-06-2	1,2-Dichloroethane		

1LCB
LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ Date Received: _____

Lab File ID: _____ Date Analyzed: _____

Purge Volume: _____(ML) Dilution Factor: _____

GC Column: _____ ID: _____(MM) Length: _____(M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene		
108-87-2	Methylcyclohexane		
78-87-5	1,2-Dichloropropane		
75-27-4	Bromodichloromethane		
10061-01-5	cis-1,3-Dichloropropene		
108-10-1	4-Methyl-2-pentanone		
108-88-3	Toluene		
10061-02-6	trans-1,3-Dichloropropene		
79-00-5	1,1,2-Trichloroethane		
127-18-4	Tetrachloroethene		
591-78-6	2-Hexanone		
124-48-1	Dibromochloromethane		
106-93-4	1,2-Dibromoethane		
108-90-7	Chlorobenzene		
100-41-4	Ethylbenzene		
1330-20-7	Xylene (total)		
100-42-5	Styrene		
75-25-2	Bromoform		
98-82-8	Isopropylbenzene		
79-34-5	1,1,2,2-Tetrachloroethane		
541-73-1	1,3-Dichlorobenzene		
106-46-7	1,4-Dichlorobenzene		
95-50-1	1,2-Dichlorobenzene		
96-12-8	1,2-Dibromo-3-chloropropane		
120-82-1	1,2,4-Trichlorobenzene		
87-61-6	1,2,3-Trichlorobenzene		

1LCC
LOW CONCENTRATION WATER SEMIVOLATILE ORGANICS
ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ Date Received: _____

Lab File ID: _____ Date Extracted: _____

Sample Volume: _____ (ML) Date Analyzed: _____

Concentrated Extract Volume: _____ (UL) Dilution Factor: _____

Injection Volume: _____ (UL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
100-52-7	Benzaldehyde		
108-95-2	Phenol		
111-44-4	bis(2-Chloroethyl)ether		
95-57-8	2-Chlorophenol		
95-48-7	2-Methylphenol		
108-60-1	2,2'-oxybis(1-Chloropropane)		
98-86-2	Acetophenone		
106-44-5	4-Methylphenol		
621-64-7	N-Nitroso-di-n-propylamine		
67-72-1	Hexachloroethane		
98-95-3	Nitrobenzene		
78-59-1	Isophorone		
88-75-5	2-Nitrophenol		
105-67-9	2,4-Dimethylphenol		
111-91-1	bis(2-Chloroethoxy)methane		
120-83-2	2,4-Dichlorophenol		
91-20-3	Naphthalene		
106-47-8	4-Chloroaniline		
87-68-3	Hexachlorobutadiene		
105-60-2	Caprolactam		
59-50-7	4-Chloro-3-methylphenol		
91-57-6	2-Methylnaphthalene		
77-47-4	Hexachlorocyclopentadiene		
88-06-2	2,4,6-Trichlorophenol		
95-95-4	2,4,5-Trichlorophenol		
92-52-4	1,1'-Biphenyl		
91-58-7	2-Chloronaphthalene		
88-74-4	2-Nitroaniline		
131-11-3	Dimethylphthalate		
606-20-2	2,6-Dinitrotoluene		
208-96-8	Acenaphthylene		
99-09-2	3-Nitroaniline		
83-32-9	Acenaphthene		

1LCD
LOW CONCENTRATION WATER SEMIVOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ Date Received: _____

Lab File ID: _____ Date Extracted: _____

Sample Volume: _____ (ML) Date Analyzed: _____

Concentrated Extract Volume: _____ (UL) Dilution Factor: _____

Injection Volume: _____ (UL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
51-28-5	2,4-Dinitrophenol		
100-02-7	4-Nitrophenol		
132-64-9	Dibenzofuran		
121-14-2	2,4-Dinitrotoluene		
84-66-2	Diethylphthalate		
86-73-7	Fluorene		
7005-72-3	4-Chlorophenyl-phenylether		
100-01-6	4-Nitroaniline		
534-52-1	4,6-Dinitro-2-methylphenol		
86-30-6	N-Nitrosodiphenylamine (1)		
95-94-3	1,2,4,5 Tetrachlorobenzene		
101-55-3	4-Bromophenyl-phenylether		
118-74-1	Hexachlorobenzene		
1912-24-9	Atrazine		
87-86-5	Pentachlorophenol		
85-01-8	Phenanthrene		
120-12-7	Anthracene		
84-74-2	Di-n-butylphthalate		
206-44-0	Fluoranthene		
129-00-0	Pyrene		
85-68-7	Butylbenzylphthalate		
91-94-1	3,3'-Dichlorobenzidine		
56-55-3	Benzo(a)anthracene		
218-01-9	Chrysene		
117-81-7	bis(2-Ethylhexyl)phthalate		
117-84-0	Di-n-octylphthalate		
205-99-2	Benzo(b)fluoranthene		
207-08-9	Benzo(k)fluoranthene		
50-32-8	Benzo(a)pyrene		
193-39-5	Indeno(1,2,3-cd)pyrene		
53-70-3	Dibenzo(a,h)anthracene		
191-24-2	Benzo(g,h,i)perylene		

(1) Cannot be separated from Diphenylamine

1LCE
LOW CONCENTRATION WATER PESTICIDE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ Date Received: _____

Sample Volume: _____ (ML) Date Extracted: _____

Concentrated Extract Volume: _____ (UL) Date Analyzed: _____

Injection Volume: _____ (UL) Dilution Factor: _____

Sulfur Cleanup: (Y/N) _____ Extraction: (Sepf/Cont) _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
319-84-6	alpha-BHC		
319-85-7	beta-BHC		
319-86-8	delta-BHC		
58-89-9	gamma-BHC (Lindane)		
76-44-8	Heptachlor		
309-00-2	Aldrin		
1024-57-3	Heptachlor epoxide		
959-98-8	Endosulfan I		
60-57-1	Dieldrin		
72-55-9	4,4'-DDE		
72-20-8	Endrin		
33213-65-9	Endosulfan II		
72-54-8	4,4'-DDD		
1031-07-8	Endosulfan sulfate		
50-29-3	4,4'-DDT		
72-43-5	Methoxychlor		
53494-70-5	Endrin ketone		
7421-93-4	Endrin aldehyde		
5103-71-9	alpha-Chlordane		
5103-74-2	gamma-Chlordane		
8001-35-2	Toxaphene		
12674-11-2	Aroclor-1016		
11104-28-2	Aroclor-1221		
11141-16-5	Aroclor-1232		
53469-21-9	Aroclor-1242		
12672-29-6	Aroclor-1248		
11097-69-1	Aroclor-1254		
11096-82-5	Aroclor-1260		

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS

DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ Date Received: _____

Lab File ID: _____ Date Analyzed: _____

Purge Volume: _____ (ML) Dilution Factor: _____

GC Column: _____ ID: _____ (MM) Length: _____(M)

Number TICs found: _____

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC. (UG/L)	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
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25					
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27					
28					
29					
30					

1LCG

LOW CONCENTRATION WATER SEMIVOLATILE ORGANICS ANALYSIS

DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ Date Received: _____

Lab File ID: _____ Date Extracted: _____

Sample Volume: _____ (ML) Date Analyzed: _____

Concentrated Extract Volume: _____ (UL) Dilution Factor: _____

Injection Volume: _____ (UL)

Number TICs found: _____

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC. (UG/L)	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
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30					

2LCA

LOW CONCENTRATION WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

	EPA SAMPLE NO.	VDMC1 (VCL) #	VDMC2 (CLA) #	VDMC3 (DCE) #	VDMC4 (BUT) #	VDMC5 (CLF) #	VDMC6 (DCA) #	VDMC7 (BEN) #
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

		QC LIMITS
VDMC1 (VCL)	= Vinyl Chloride-d3	(49-138)
VDMC2 (CLA)	= Chloroethane-d5	(60-126)
VDMC3 (DCE)	= 1,1-Dichloroethene-d2	(65-130)
VDMC4 (BUT)	= 2-Butanone-d5	(42-171)
VDMC5 (CLF)	= Chloroform-d	(80-123)
VDMC6 (DCA)	= 1,2-Dichloroethane-d4	(78-129)
VDMC7 (BEN)	= Benzene-d6	(78-121)

\# Column to be used to flag recovery values

* Values outside of contract required QC limits

Page __ of __

2LCB
LOW CONCENTRATION WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

	EPA SAMPLE NO.	VDMC8 (DPA) #	VDMC9 (TOL) #	VDMC10 (TDP) #	VDMC11 (HEX) #	VDMC12 (BRF) #	VDMC13 (TCA) #	VDMC14 (DCZ) #	TOT OUT
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
13									
14									
15									
16									
17									
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21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

		QC LIMITS
VDMC8 (DPA)	= 1,2-Dichloropropane-d6	(84-123)
VDMC9 (TOL)	= Toluene-d8	(77-120)
VDMC10 (TDP)	= trans-1,3-Dichloropropene-d4	(80-128)
VDMC11 (HEX)	= 2-Hexanone-d5	(37-169)
VDMC12 (BRF)	= Bromoform-d	(76-135)
VDMC13 (TCA)	= 1,1,2,2-Tetrachloroethane-d2	(75-131)
VDMC14 (DCZ)	= 1,2-Dichlorobenzene-d4	(50-150)

Column to be used to flag recovery values
* Values outside of contract required QC limits

Page __ of __

2LCC

LOW CONCENTRATION WATER SEMIVOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

	EPA SAMPLE NO.	SDMC1 (PHL)#	SDMC2 (BCE)#	SDMC3 (2CP)#	SDMC4 (4MP)#	SDMC5 (NBZ)#	SDMC6 (2NP)#	SDMC7 (DCP)#	SDMC8 (4CA)#
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
13									
14									
15									
16									
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19									
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21									
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24									
25									
26									
27									
28									
29									
30									

		QC LIMITS
SDMC1 (PHL)	= Phenol-d5	(10-110)
SDMC2 (BCE)	= bis-(2-Chloroethyl)ether-d8	(41-94)
SDMC3 (2CP)	= 2-Chlorophenol-d4	(33-110)
SDMC4 (4MP)	= 4-Methylphenol-d8	(38-95)
SDMC5 (NBZ)	= Nitrobenzene-d5	(35-114)
SDMC6 (2NP)	= 2-Nitrophenol-d4	(40-106)
SDMC7 (DCP)	= 2,4-Dichlorophenol-d3	(42-98)
SDMC8 (4CA)	= 4-Chloroaniline-d4	(8-70)

\# Column to be used to flag recovery values

* Values outside of contract required QC limits

D DMC diluted out

Page __ of __

2LCD

LOW CONCENTRATION WATER SEMIVOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

	EPA SAMPLE NO.	SDMC9 (DMP)#	SDMC10 (ACY)#	SDMC11 (4NP)#	SDMC12 (FLR)#	SDMC13 (NMP)#	SDMC14 (ANC)#	SDMC15 (PYR)#	SDMC16 (BAP)#	TOT OUT
01										
02										
03										
04										
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		QC LIMITS
SDMC9 (DMP)	= Dimethylphthalate-d6	(62-102)
SDMC10(ACY)	= Acenaphthylene-d8	(49-98)
SDMC11(4NP)	= 4-Nitrophenol-d4	(9-181)
SDMC12(FLR)	= Fluorene-d10	(50-97)
SDMC13(NMP)	= 4,6-Dinitro-methylphenol-d2	(53-153)
SDMC14(ANC)	= Anthracene-d10	(55-116)
SDMC15(PYR)	= Pyrene-d10	(47-114)
SDMC16(BAP)	= Benzo(a)pyrene-d12	(54-120)

\# Column to be used to flag recovery values

* Values outside of contract required QC limits

D DMC diluted out

2LCE
LOW CONCENTRATION WATER PESTICIDE SURROGATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

GC Column(1): _____ ID: _____(MM) GC Column(2): _____ ID: _____(MM)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

			QC LIMITS
TCX	=	Tetrachloro-m-xylene	(30-150)
DCB	=	Decachlorobiphenyl	(30-150)

\# Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

Page __ of __

3LCA
LOW CONCENTRATION WATER VOLATILE
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene					61-145
Benzene					76-127
Trichloroethene					71-120
Toluene					76-125
Chlorobenzene					75-130

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC #	RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethene					14	61-145
Benzene					11	76-127
Trichloroethene					14	71-120
Toluene					13	76-125
Chlorobenzene					13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: _____ out of _____ outside limits
Spike Recovery: _____ out of _____ outside limits

COMMENTS: _____

_____

3LCB
LOW CONCENTRATION WATER SEMIVOLATILE
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC #	QC LIMITS REC.
Phenol					12-110
2-Chlorophenol					27-123
N-Nitroso-di-n-prop.(1)					41-116
4-Chloro-3-methylphenol					23-97
Acenaphthene					46-118
4-Nitrophenol					10-80
2,4-Dinitrotoluene					24-96
Pentachlorophenol					9-103
Pyrene					26-127

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC #	RPD #	QC LIMITS	
					RPD	REC.
Phenol					42	12-110
2-Chlorophenol					40	27-123
N-Nitroso-di-n-prop.(1)					38	41-116
4-Chloro-3-methylphenol					42	23-97
Acenaphthene					31	46-118
4-Nitrophenol					50	10-80
2,4-Dinitrotoluene					38	24-96
Pentachlorophenol					50	9-103
Pyrene					31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: _____out of _____ outside limits
Spike Recovery: _____ out of _____ outside limits

COMMENTS: _____

_____

3LCC
LOW CONCENTRATION WATER PESTICIDE
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Instrument ID: _____ GC Column: _____ ID: _____(mm)

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC #	QC LIMITS REC.
gamma-BHC (Lindane)					56-123
Heptachlor					40-131
Aldrin					40-120
Dieldrin					52-126
Endrin					56-121
4,4'-DDT					38-127

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC #	RPD #	QC LIMITS RPD	QC LIMITS REC.
gamma-BHC (Lindane)					15	56-123
Heptachlor					20	40-131
Aldrin					22	40-120
Dieldrin					18	52-126
Endrin					21	56-121
4,4'-DDT					27	38-127

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: _____ out of _____ outside limits
Spike Recovery:_____ out of _____ outside limits

COMMENTS: _____

_____

Page __ of __

3LCD

LOW CONCENTRATION WATER PESTICIDE LAB CONTROL SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ LCS Lot No.: _____

LCS Aliquot: _____(UL) Date Extracted: _____

Concentrated Extract Volume: _____(UL) Date Analyzed: _____

Injection Volume: _____(UL) Dilution Factor: _____

Sulfur Cleanup: (Y/N) _____

Instrument ID (1): _____ GC Column (1): _____ ID: _____(MM)

COMPOUND	AMOUNT ADDED (NG)	AMOUNT RECOVERED (NG)	%REC #	QC LIMITS
gamma-BHC (Lindane)				50-120
Heptachlor epoxide				50-150
Dieldrin				30-130
4,4'-DDE				50-150
Endrin				50-120
Endosulfan sulfate				50-120
gamma-Chlordane				30-130

Instrument ID (2): _____ GC Column (2): _____ ID: _____(MM)

COMPOUND	AMOUNT ADDED (NG)	AMOUNT RECOVERED (NG)	%REC #	QC LIMITS
gamma-BHC (Lindane)				50-120
Heptachlor epoxide				50-150
Dieldrin				30-130
4,4'-DDE				50-150
Endrin				50-120
Endosulfan sulfate				50-120
gamma-Chlordane				30-130

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

LCS Recovery:_____ outside limits out of _____total.

4LCA

LOW CONCENTRATION WATER

VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ Date Analyzed: _____

Lab File ID: _____ Time Analyzed: _____

Instrument ID: _____

GC Column: _____ ID: _____ (MM) Length: _____(M)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLE ANALYSES:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
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23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS: _____

_____

4LCB

LOW CONCENTRATION WATER

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ Date Extracted: _____

Lab File ID: _____ Date Analyzed: _____

Instrument ID: _____ Time Analyzed: _____

THIS METHOD BLANK APPLIES TO THE FOLLOWING ANALYSES:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
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21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS: _____

_____

Page __ of __

4LCC

LOW CONCENTRATION WATER

PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Date Extracted: _____ Lab Sample ID: _____

Date Analyzed (1): _____ Date Analyzed (2): _____

Time Analyzed (1): _____ Time Analyzed (2): _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column (1): _____ ID: _____(MM) GC Column (2): _____ ID: _____(MM)

Sulfur Cleanup: (Y/N) _____ Extraction (Sepf/Cont): _____

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLE ANALYSES:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS: _____

_____

Page __ of __

5LCA

LOW CONCENTRATION WATER VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab File ID: _____ BFB Injection Date: _____

Instrument ID: _____ BFB Injection Time: _____

GC Column: _____ ID: _____(MM) Column Length: _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	
75	30.0 - 66.0% of mass 95	
95	Base peak, 100% relative abundance	
96	5.0 - 9.0% of mass 95	
173	Less than 2.0% of mass 174	( )1
174	50.0 - 120.0% of mass 95	
175	4.0 - 9.0 % of mass 174	( )1
176	93.0 - 101.0% of mass 174	( )1
177	5.0 - 9.0% of mass 176	( )2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5LCB

LOW CONCENTRATION WATER SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.:_____ SDG No.:_____

Lab File ID: _____ DFTPP Injection Date: _____

Instrument ID: _____ DFTPP Injection Time: _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0- 80.0% of mass 198	
68	Less than 2.0% of mass 69	( )1
69	Mass 69 relative abundance	
70	Less than 2.0% of mass 69	( )1
127	25.0 - 75.0% of mass 198	
197	Less than 1.0% of mass 198	
198	Base Peak, 100% relative abundance	
199	5.0 to 9.0% of mass 198	
275	10.0- 30.0% of mass 198	
365	Greater than 0.75% of mass 198	
441	Present, but less than mass 443	
442	40.0 - 110.0% of mass 198	
443	15.0 - 24.0% of mass 442	( )2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

6LCA
LOW CONCENTRATION WATER VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Calibration Times: _____ _____

GC Column: _____ ID: _____(MM) Length: _____ (M)

LAB FILE ID: RRF0.5 = _____ RRF1 = _____

RRF5 = _____ RRF10 = _____ RRF25 = _____

COMPOUND	RRF0.5	RRF1	RRF5	RRF10	RRF25	$\overline{RRF}$	% RSD
Dichlorodifluoromethane							
Chloromethane							
Vinyl Chloride *							*
Bromomethane *							*
Chloroethane							
Trichlorofluoromethane							
1,1-Dichloroethene *							*
1,1,2-Trichloro-1,2,2-trifluoroethane							
Acetone							
Carbon Disulfide							
Methyl Acetate							
Methylene Chloride							
trans-1,2-Dichloroethene							
Methyl tert-Butyl Ether							
1,1-Dichloroethane *							*
cis-1,2-Dichloroethene							
2-Butanone							
Bromochloromethane *							*
Chloroform *							*
1,1,1-Trichloroethane *							*
Cyclohexane							
Carbon Tetrachloride *							*
Benzene *							*
1,2-Dichloroethane *							*
Trichloroethene *							*
Methylcyclohexane							

*Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6LCB
LOW CONCENTRATION WATER VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Calibration Times: _____ _____

GC Column: _____ ID: _____(MM) Length: _____(M)

LAB FILE ID: RRF0.5 = _____ RRF1 = _____

RRF5 = _____ RRF10 = _____ RRF25 = _____

COMPOUND	RRF0.5	RRF1	RRF5	RRF10	RRF25	$\overline{\text{RRF}}$	% RSD
1,2-Dichloropropane							
Bromodichloromethane *							*
cis-1,3-Dichloropropene *							*
4-Methyl-2-pentanone							
Toluene *							*
trans-1,3-Dichloropropene *							*
1,1,2-Trichloroethane *							*
Tetrachloroethene *							*
2-Hexanone							
Dibromochloromethane *							*
1,2-Dibromoethane *							*
Chlorobenzene *							*
Ethylbenzene *							*
Xylene (total) *							*
Styrene *							*
Bromoform *							*
Isopropylbenzene							
1,1,2,2-Tetrachloroethane *							*
1,3-Dichlorobenzene *							*
1,4-Dichlorobenzene *							*
1,2-Dichlorobenzene *							*
1,2-Dibromo-3-chloropropane							
1,2,4-Trichlorobenzene *							*
1,2,3-Trichlorobenzene *							*

*Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6LCC

LOW CONCENTRATION WATER VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Calibration Times: _____ _____

GC Column: _____ ID: _____(MM) Length: _____(M)

LAB FILE ID: RRF0.5 = _____ RRF1 = _____

RRF5 = _____ RRF10 = _____ RRF25 = _____

COMPOUND	RRF0.5	RRF1	RRF5	RRF10	RRF25	$\overline{RRF}$	% RSD
Vinyl chloride-d3							
Chloroethane-d5							
1,1-Dichloroethene-d2							
2-Butanone-d5							
Chloroform-d							
1,2-Dichloroethane-d4							
Benzene-d6							
1,2-Dichloropropane-d6							
Toluene-d8							
trans-1,3-Dichloropropene-d4							
2-Hexanone-d5							
Bromoform-d							
1,1,2,2-Tetrachloroethane-d2							
1,2-Dichlorobenzene-d4							

*Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6LCD

LOW CONCENTRATION WATER SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Calibration Times: _____ _____

LAB FILE ID: RRF5 = _____ RRF10 = _____

RRF20 = _____ RRF50 = _____ RRF80 = _____

COMPOUND	RRF5	RRF10	RRF20	RRF50	RRF80	$\overline{\text{RRF}}$	% RSD
Benzaldehyde							
Phenol *							*
bis-(2-Chloroethyl)ether *							*
2-Chlorophenol *							*
2-Methylphenol *							*
2,2'-oxybis(1-Chloropropane)							
Acetophenone							
4-Methylphenol *							*
N-Nitroso-di-n-propylamine *							*
Hexachloroethane *							*
Nitrobenzene *							*
Isophorone *							*
2-Nitrophenol *							*
2,4-Dimethylphenol *							*
bis(2-Chloroethoxy)methane *							*
2,4-Dichlorophenol *							*
Naphthalene *							*
4-Chloroaniline							
Hexachlorobutadiene							
Caprolactam							
4-Chloro-3-methylphenol *							*
2-Methylnaphthalene *							*
Hexachlorocyclopentadiene							
2,4,6-Trichlorophenol *							*
2,4,5-Trichlorophenol *							*
1,1'-Biphenyl							
2-Chloronaphthalene *							*
2-Nitroaniline							
Dimethylphthalate							
2,6-Dinitrotoluene *							*
Acenaphthylene *							*
3-Nitroaniline							
Acenaphthene *							*
2,4-Dinitrophenol							
4-Nitrophenol							
Dibenzofuran *							*

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6LCE

LOW CONCENTRATION WATER SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Calibration Times: _____ _____

LAB FILE ID: RRF5 = _____ RRF10 = _____

RRF20 = _____ RRF50 = _____ RRF80 = _____

COMPOUND	RRF5	RRF10	RRF20	RRF50	RRF80	____ RRF	% RSD
2,4-Dinitrotoluene *							*
Diethylphthalate							
Fluorene *							*
4-Chlorophenyl-phenylether *							*
4-Nitroaniline							
4,6-Dinitro-2-methylphenol							
N-Nitrosodiphenylamine (1)							
1,2,4,5 Tetrachlorobenzene							
4-Bromophenyl-phenylether *							*
Hexachlorobenzene *							*
Atrazine							
Pentachlorophenol *							*
Phenanthrene *							*
Anthracene *							*
Di-n-butylphthalate							
Fluoranthene *							*
Pyrene *							*
Butylbenzylphthalate							
3,3'-Dichlorobenzidine							
Benzo(a)anthracene *							*
Chrysene *							*
bis(2-Ethylhexyl)phthalate							
Di-n-octylphthalate							
Benzo(b)fluoranthene *							*
Benzo(k)fluoranthene *							*
Benzo(a)pyrene *							*
Indeno(1,2,3-cd)pyrene *							*
Dibenzo(a,h)anthracene *							*
Benzo(g,h,i)perylene *							*

(1) Cannot be separated from Diphenylamine

* Compounds with required minimum RRF and maximum %RSD values.

All other compounds must meet a minimum RRF of 0.010.

6LCF

LOW CONCENTRATION WATER SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Calibration Times: _____ _____

LAB FILE ID: RRF5 = _____ RRF10 = _____

RRF20 = _____ RRF50 = _____ RRF80 = _____

COMPOUND	RRF5	RRF10	RRF20	RRF50	RRF80	$\overline{RRF}$	% RSD
Phenol-d5							
bis-(2-Chloroethyl) ether-d8							
2-Chlorophenol-d4							
4-Methylphenol-d8							
Nitrobenzene-d5							
2-Nitrophenol-d4							
2,4-Dichlorophenol-d3							
4-Chloroaniline-d4							
Dimethylphthalate-d6							
Acenaphthylene-d8							
4-Nitrophenol-d4							
Fluorene-d10							
4,6-Dinitro-methylphenol-d2							
Anthracene-d10							
Pyrene-d10							
Benzo(a)pyrene-d12							

6LCG
LOW CONCENTRATION WATER PESTICIDE
INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Level (x low): low _____ mid _____ high _____

GC Column: _____ ID: _____(MM) Date(s) Analyzed: _____ _____

COMPOUND	RT OF STANDARDS			MEAN RT	RT WINDOW	
	LOW	MID	HIGH		FROM	TO
alpha-BHC						
beta-BHC						
delta-BHC						
gamma-BHC (Lindane)						
Heptachlor						
Aldrin						
Heptachlor epoxide						
Endosulfan I						
Dieldrin						
4,4'-DDE						
Endrin						
Endosulfan II						
4,4'-DDD						
Endosulfan sulfate						
4,4'-DDT						
Methoxychlor						
Endrin ketone						
Endrin aldehyde						
alpha-Chlordane						
gamma-Chlordane						
Tetrachloro-m-xylene						
Decachlorobiphenyl						

* Surrogate retention times are measured from Standard Mix A analyses.

Retention time windows are ±0.05 minutes for all compounds that elute before Heptachlor expoxide, ±0.07 minutes for all other compounds, except ±0.10 minutes for Decachlorobiphenyl.

6LCH
LOW CONCENTRATION WATER PESTICIDE
INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Level (x low): low _____ mid _____ high _____

GC Column: _____ ID: _____(MM) Date(s) Analyzed: _____ _____

COMPOUND	CALIBRATION FACTORS LOW	MID	HIGH	MEAN	%RSD
alpha-BHC					
beta-BHC					
delta-BHC					
gamma-BHC (Lindane)					
Heptachlor					
Aldrin					
Heptachlor epoxide					
Endosulfan I					
Dieldrin					
4,4'-DDE					
Endrin					
Endosulfan II					
4,4'-DDD					
Endosulfan sulfate					
4,4'-DDT					
Methoxychlor					
Endrin ketone					
Endrin aldehyde					
alpha-Chlordane					
gamma-Chlordane					
Tetrachloro-m-xylene					
Decachlorobiphenyl					

* Surrogate calibration factors are measured from Standard Mix A analyses.

6LCI
LOW CONCENTRATION WATER PESTICIDE
INITIAL CALIBRATION OF MULTICOMPONENT ANALYTES

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Date(s) Analyzed: _____ _____

GC Column: _____ ID: _____(MM)

COMPOUND	AMOUNT (NG)	PEAK[1]	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR
Toxaphene		1				
		2				
		3				
		4				
		5				
Aroclor 1016		1				
		2				
		3				
		4				
		5				
Aroclor 1221		1				
		2				
		3				
		4				
		5				
Aroclor 1232		1				
		2				
		3				
		4				
		5				
Aroclor 1242		1				
		2				
		3				
		4				
		5				
Aroclor 1248		1				
		2				
		3				
		4				
		5				
Aroclor 1254		1				
		2				
		3				
		4				
		5				
Aroclor 1260		1				
		2				
		3				
		4				
		5				

[1]At least 3 peaks for each column are required for identification of multicomponent analytes.

6LCJ

LOW CONCENTRATION WATER PESTICIDE ANALYTE RESOLUTION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

GC Column (1): _____ ID: ____(MM) Instrument ID (1): _____

EPA Sample No. (RESC##): _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			

GC Column (2): _____ ID: ____(MM) Instrument ID (2): _____

EPA Sample No. (RESC##): _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			

6LCK
LOW CONCENTRATION WATER PERFORMANCE EVALUATION MIXTURE (PEM)

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.:_____

GC Column (1): _____ ID: ____(MM) Instrument ID (1): _____

EPA Sample No. (PEM##): _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			

GC Column (2): _____ ID:_____(MM) Instrument ID (2): _____

EPA Sample No. (PEM##): _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			

6LCL
LOW CONCENTRATION WATER INDIVIDUAL STANDARD MIXTURE A (INDA)

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

GC Column (1): _____ ID: ____(MM) Instrument ID (1): _____

EPA Sample No. (INDAM##): _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			

GC Column (2): _____ ID: ____(MM) Instrument ID (2): _____

EPA Sample No. (INDAM##): _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			

6LCM

LOW CONCENTRATION WATER INDIVIDUAL STANDARD MIXTURE B (INDB)

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

GC Column (1): _____ ID: ____(MM) Instrument ID (1): _____

EPA Sample No. (INDBM##): _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			

GC Column (2): _____ ID: ____(MM) Instrument ID (2): _____

EPA Sample No. (INDBM##): _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			

7LCA
LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.:_____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date: _____ Time: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

EPA Sample No.(VSTD005##): _____ Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(MM) Length: _____ (M)

COMPOUND	$\overline{\text{RRF}}$	RRF5	MIN RRF	%D	MAX %D
Dichlorodifluoromethane					
Chloromethane					
Vinyl Chloride			0.100		30.0
Bromomethane			0.100		30.0
Chloroethane					
Trichlorofluoromethane					
1,1-Dichloroethene			0.100		30.0
1,1,2-Trichloro-1,2,2-trifluoroethane					
Acetone					
Carbon Disulfide					
Methyl Acetate					
Methylene Chloride					
trans-1,2-Dichloroethene					
Methyl tert-Butyl Ether					
1,1-Dichloroethane			0.200		30.0
cis-1,2-Dichloroethene					
2-Butanone					
Bromochloromethane			0.050		30.0
Chloroform			0.200		30.0
1,1,1-Trichloroethane			0.100		30.0
Cyclohexane					
Carbon Tetrachloride			0.100		30.0
Benzene			0.400		30.0
1,2-Dichloroethane			0.100		30.0
Trichloroethene			0.300		30.0
Methylcyclohexane					

All other compounds must meet a minimum RRF of 0.010.

7LCB

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date: _____ Time: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

EPA Sample No.(VSTD005##): _____ Init. Calib. Times: _____ _____

GC Column:_____ID:_____(MM) Length: _____ (M)

COMPOUND	$\overline{\text{RRF}}$	RRF5	MIN RRF	%D	MAX %D
1,2-Dichloropropane					
Bromodichloromethane			0.200		30.0
cis-1,3-Dichloropropene			0.200		30.0
4-Methyl-2-pentanone					
Toluene			0.400		30.0
trans-1,3-Dichloropropene			0.100		30.0
1,1,2-Trichloroethane			0.100		30.0
Tetrachloroethene			0.100		30.0
2-Hexanone					
Dibromochloromethane			0.100		30.0
1,2-Dibromoethane			0.100		30.0
Chlorobenzene			0.500		30.0
Ethylbenzene			0.100		30.0
Xylene (total)			0.300		30.0
Styrene			0.300		30.0
Bromoform			0.050		30.0
Isopropylbenzene					
1,1,2,2-Tetrachloroethane			0.100		30.0
1,3-Dichlorobenzene			0.400		30.0
1,4-Dichlorobenzene			0.400		30.0
1,2-Dichlorobenzene			0.400		30.0
1,2-Dibromo-3-chloropropane					
1,2,4-Trichlorobenzene			0.200		30.0
1,2,3-Trichlorobenzene			0.200		30.0

All other compounds must meet a minimum RRF of 0.010.

7LCC

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date: _____ Time: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

EPA Sample No.(VSTD005##): _____ Init. Calib. Times: _____ _____

GC Column:_____ID:_____(MM) Length: _____(M)

COMPOUND	$\overline{\text{RRF}}$	RRF5	MIN RRF	%D	MAX %D
Vinyl Chloride-d3					
Chloroethane-d5					
1,1-Dichloroethene-d2					
2-Butanone-d5					
Chloroform-d					
1,2-Dichloroethane-d4					
Benzene-d6					
1,2-Dichloropropane-d6					
Toluene-d8					
trans-1,3-Dichloropropene-d4					
2-Hexanone-d5					
Bromoform-d					
1,1,2,2-Tetrachloroethane-d2					
1,2-Dichlorobenzene-d4					

7LCD

LOW CONCENTRATION WATER SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date: _____ Time: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

EPA Sample No.(SSTD020##): _____ Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(MM)

COMPOUND	$\overline{RRF}$	RRF20	MIN RRF	%D	MAX %D
Benzaldehyde					
Phenol			0.800		25.0
bis-(2-Chloroethyl)ether			0.700		25.0
2-Chlorophenol			0.800		25.0
2-Methylphenol			0.700		25.0
2,2'-oxybis(1-Chloropropane)					
Acetophenone					
4-Methylphenol			0.600		25.0
N-Nitroso-di-n-propylamine			0.500		25.0
Hexachloroethane			0.300		25.0
Nitrobenzene			0.200		25.0
Isophorone			0.400		25.0
2-Nitrophenol			0.100		30.0
2,4-Dimethylphenol			0.200		30.0
bis(2-Chloroethoxy)methane			0.300		25.0
2,4-Dichlorophenol			0.200		25.0
Naphthalene			0.700		25.0
4-Chloroaniline					
Hexachlorobutadiene					
Caprolactam					
4-Chloro-3-methylphenol			0.200		25.0
2-Methylnaphthalene			0.400		25.0
Hexachlorocyclopentadiene					
2,4,6-Trichlorophenol			0.200		25.0
2,4,5-Trichlorophenol			0.200		25.0
1,1'-Biphenyl					
2-Chloronaphthalene			0.800		25.0
2-Nitroaniline					
Dimethylphthalate					
2,6-Dinitrotoluene			0.200		25.0
Acenaphthylene			0.900		25.0
3-Nitroaniline					
Acenaphthene			0.900		25.0
2,4-Dinitrophenol					
4-Nitrophenol					
Dibenzofuran			0.800		25.0

All other compounds must meet a minimum RRF of 0.010.

7LCE
LOW CONCENTRATION WATER SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date: _____ Time: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

EPA Sample No.(SSTD020##): _____ Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(MM)

COMPOUND	$\overline{RRF}$	RRF20	MIN RRF	%D	MAX %D
2,4-Dinitrotoluene			0.200		30.0
Diethylphthalate					
Fluorene			0.900		25.0
4-Chlorophenyl-phenylether			0.400		25.0
4-Nitroaniline					
4,6-Dinitro-2-methylphenol					
N-Nitrosodiphenylamine (1)					
1,2,4,5 Tetrachlorobenzene					
4-Bromophenyl-phenylether			0.100		25.0
Hexachlorobenzene			0.100		25.0
Atrazine					
Pentachlorophenol			0.050		25.0
Phenanthrene			0.700		25.0
Anthracene			0.700		25.0
Di-n-butylphthalate					
Fluoranthene			0.600		25.0
Pyrene			0.600		25.0
Butylbenzylphthalate					
3,3'-Dichlorobenzidine					
Benzo(a)anthracene			0.800		25.0
Chrysene			0.700		25.0
bis(2-Ethylhexyl)phthalate					
Di-n-octylphthalate					
Benzo(b)fluoranthene			0.700		25.0
Benzo(k)fluoranthene			0.700		25.0
Benzo(a)pyrene			0.700		25.0
Indeno(1,2,3-cd)pyrene			0.500		25.0
Dibenzo(a,h)anthracene			0.400		25.0
Benzo(g,h,i)perylene			0.500		25.0

(1) Cannot be separated from Diphenylamine
All other compounds must meet a minimum RRF of 0.010.

7LCF
LOW CONCENTRATION WATER SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date: _____ Time: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

EPA Sample No.(SSTD020##): _____ Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(MM)

COMPOUND	$\overline{RRF}$	RRF20	MIN RRF	%D	MAX %D
Phenol-d5					
bis-(2-Chloroethyl)ether-d8					
2-Chlorophenol-d4					
4-Methylphenol-d8					
Nitrobenzene-d5					
2-Nitrophenol-d4					
2,4-Dichlorophenol-d3					
4-Chloroaniline-d4					
Dimethylphthalate-d6					
Acenaphthylene-d8					
4-Nitrophenol-d4					
Fluorene-d10					
4,6-Dinitro-methylphenol-d2					
Anthracene-d10					
Pyrene-d10					
Benzo(a)pyrene-d12					

7LCG
LOW CONCENTRATION WATER PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

GC Column: _____ ID: ____(MM) Init. Calib. Date(s): _____ _____

EPA Sample No. (PIBLK##): _____ Date Analyzed: _____

Lab Sample ID (PIBLK): _____ Time Analyzed: _____

EPA Sample No. (PEM##): _____ Date Analyzed: _____

Lab Sample ID (PEM): _____ Time Analyzed: _____

PEM COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (NG)	NOM AMOUNT (NG)	%D
alpha-BHC						
beta-BHC						
gamma-BHC (Lindane)						
Endrin						
4,4'-DDT						
Methoxychlor						

4,4'-DDT % Breakdown (1): _____ Endrin % breakdown (1): _____

Combined % Breakdown (1): _____

7LCH
LOW CONCENTRATION WATER PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

GC Column: _____ ID: ____(MM) Init. Calib. Date(s): _____ _____

EPA Sample No. (PIBLK##): _____ Date Analyzed: _____

Lab Sample ID (PIBLK): _____ Time Analyzed: _____

EPA Sample No. (INDAM##): _____ Date Analyzed: _____

Lab Sample ID (INDA): _____ Time Analyzed: _____

INDIVIDUAL MIX A COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (NG)	NOM AMOUNT (NG)	%D
alpha-BHC						
gamma-BHC (Lindane)						
Heptachlor						
Endosulfan I						
Dieldrin						
Endrin						
4,4'-DDD						
4,4'-DDT						
Methoxychlor						
Tetrachloro-m-xylene						
Decachlorobiphenyl						

EPA Sample No. (INDBM##): _____ Date Analyzed: _____

Lab Sample ID (INDB): _____ Time Analyzed: _____

INDIVIDUAL MIX B COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (NG)	NOM AMOUNT (NG)	%D
beta-BHC						
delta-BHC						
Aldrin						
Heptachlor epoxide						
4,4'-DDE						
Endosulfan II						
Endosulfan sulfate						
Endrin ketone						
Endrin aldehyde						
alpha-Chlordane						
gamma-Chlordane						
Tetrachloro-m-xylene						
Decachlorobiphenyl						

8LCA

LOW CONCENTRATION WATER VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

EPA Sample No.(VSTD005##): _____ Date Analyzed: _____

Lab File ID (Standard): _____ Time Analyzed: _____

Instrument ID: _____

GC Column: _____ ID: _____(MM) Length:_____(M)

		IS1 (CBZ) AREA	#	RT	#	IS2 (DFB) AREA	#	RT	#	IS3 (DCB) AREA	#	RT	#
	12 HOUR STD												
	UPPER LIMIT												
	LOWER LIMIT												
	EPA SAMPLE NO.												
01													
02													
03													
04													
05													
06													
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +40% of internal standard area
AREA LOWER LIMIT = -40% of internal standard area
RT UPPER LIMIT = +0.33 minutes of internal standard RT
RT LOWER LIMIT = -0.33 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

8LCB

LOW CONCENTRATION WATER SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

EPA Sample No.(SSTD020##): _____ Date Analyzed: _____

Lab File ID (Standard): _____ Time Analyzed: _____

Instrument ID: _____ GC Column: _____ID: _____(MM)

		IS1 (DCB) AREA	#	RT	#	IS2 (NPT) AREA	#	RT	#	IS3 (ANT) AREA	#	RT	#
	12 HOUR STD												
	UPPER LIMIT												
	LOWER LIMIT												
	EPA SAMPLE NO.												
01													
02													
03													
04													
05													
06													
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.33 minutes of internal standard RT
RT LOWER LIMIT = -0.33 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

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8LCC

LOW CONCENTRATION WATER SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

EPA Sample No.(SSTD020##): _____ Date Analyzed: _____

Lab File ID (Standard): _____ Time Analyzed: _____

Instrument ID: _____ GC Column: _____ID: _____(MM)

		IS4 (PHN) AREA	#	RT	#	IS5 (CRY) AREA	#	RT	#	IS6 (PRY) AREA	#	RT	#
	12 HOUR STD												
	UPPER LIMIT												
	LOWER LIMIT												
	EPA SAMPLE NO.												
01													
02													
03													
04													
05													
06													
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.33 minutes of internal standard RT
RT LOWER LIMIT = -0.33 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

Page __ of __

8LCD
LOW CONCENTRATION WATER PESTICIDE ANALYTICAL SEQUENCE

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

GC Column: _____ ID: _____(MM) Init. Calib. Date(s): _____ _____

Instrument ID: _____

THE ANALYTICAL SEQUENCE OF SAMPLES, BLANKS, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION TCX:_____ DCB:_____					
	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene (±0.05 MINUTES)
DCB = Decachlorobiphenyl (±0.10 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

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9LCA

LOW CONCENTRATION WATER PESTICIDE FLORISIL CARTRIDGE CHECK

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Florisil Cartridge Lot Number: _____ Date of Analysis: _____

GC Column (1): _____ ID:_____(MM) GC Column(2): _____ ID: ____(MM)

COMPOUND	SPIKE ADDED (NG)	SPIKE RECOVERED (NG)	% REC #	QC LIMITS
alpha-BHC				80-120
gamma-BHC (Lindane)				80-120
Heptachlor				80-120
Endosulfan I				80-120
Dieldrin				80-120
Endrin				80-120
4,4'-DDD				80-120
4,4'-DDT				80-120
Methoxychlor				80-120
Tetrachloro-m-xylene				80-120
Decachlorobiphenyl				80-120
2,4,5-Trichlorophenol				<5

Column to be used to flag recovery with an asterisk.
* Values outside of QC limits.

THIS CARTRIDGE LOT APPLIES TO THE FOLLOWING SAMPLES,
LABORATORY CONTROL SAMPLES, AND BLANKS:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				

10LCA

LOW CONCENTRATION WATER PESTICIDE IDENTIFICATION

SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ Date(s) Analyzed: _____ _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column:(1): _____ ID:_____(MM) GC Column:(2): _____ ID: _____(MM)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

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10LCB

LOW CONCENTRATION WATER PESTICIDE IDENTIFICATION
SUMMARY FOR MULTICOMPONENT ANALYTES

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Client No.: _____ SDG No.: _____

Lab Sample ID: _____ Date(s) Analyzed: _____ _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column:(1): _____ ID: _____(MM) GC Column:(2): _____ ID: _____(MM)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	%D
_____	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
_____							
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
_____							
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks for each column are required for identification of multicomponent analytes.

Page __ of __

SAMPLE LOG-IN SHEET

Lab Name	Page __ of __
Received By (Print Name)	Log-in Date
Received By (Signature)	

Case Number	Sample Delivery Group No.	Client Number

Remarks:		EPA Sample #	Corresponding Sample Tag #	Corresponding Assigned Lab #	Remarks: Condition of Sample Shipment, etc.
1. Custody Seal(s)	Present/Absent* Intact/Broken				
2. Custody Seal Nos.	_____ _____				
3. Chain of Custody Records	Present/Absent*				
4. Traffic Reports or Packing Lists	Present/Absent*				
5. Airbill	Airbill/Sticker Present/Absent*				
6. Airbill No.	_____ _____				
7. Sample Tags	Present/Absent*				
Sample Tag Nos.	Listed/Not Listed on Chain-of-Custody				
8. Sample Condition	Intact/Broken*/ Leaking				
9. Cooler Temperature Indicator Bottle	Present/Absent*				
10. Cooler Temperature	_____				
11. Does information on custody records, traffic reports, and sample tags agree?	Yes/No*				
12. Date Received at Lab	_____				
13. Time Received	_____				
Sample Transfer					
Fraction	Fraction				
Area #	Area #				
By	By				
On	On				

* Contact SMO and attach record of resolution

Reviewed By	Logbook No.
Date	Logbook Page No.

LOW CONCENTRATION WATER ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET

LABORATORY NAME _____

CITY/STATE _____

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____

_____ _____ CLIENT NO. _____

CONTRACT NO. _____

SOW NO. _____

All documents delivered in the Complete SDG File must be original documents where possible.

	PAGE NOs		CHECK	
	FROM	TO	LAB	EPA
1. **Inventory Sheet** (Form DC-2) (Do Not Number)				
2. **SDG Case Narrative**				
3. **SDG Cover Sheet/Traffic Report**				
4. **Volatiles Data**				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II LCV)				
Matrix Spike/Matrix Spike Duplicate Recovery (Form III LCV) (if Region requests)				
Method Blank Summary (Form IV LCV)				
GC/MS Instrument Performance Check (Form V LCV)				
Internal Standard Area and RT Summary (Form VIII LCV)				
b. Sample Data				
TCL Results - (Form I LCV-1, LCV-2)				
Tentatively Identified Compounds (Form I LCV-TIC)				
Reconstructed Total Ion Chromatograms (RIC) for each sample				
For each sample:				
Raw Spectra and background-subtracted mass spectra of target compounds identified				
Quantitation reports				
Mass Spectra of all reported TICs with three best library matches				
c. Standards Data (All Instruments)				
Initial Calibration Data (Form VI LCV-1, LCV-2, LCV-3)				
RICs and Quantitation Reports for all Standards				
Continuing Calibration Data (Form VII LCV-1, LCV-2, LCV-3)				
RICs and Quantitation Reports for all Standards				
d. Raw QC Data				
BFB				
Blank Data				
Matrix Spike/Matrix Spike Duplicate Data (if Region requests)				

LOW CONCENTRATION WATER ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET (Con't)

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____
_____ _____ CLIENT NO. _____

	PAGE NOs FROM	TO	CHECK LAB	EPA
5. **Semivolatiles Data**				
a. QC Summary				
Deuterated Monitoring Compound (Form II LCSV)				
MS/MSD Summary (Form III LCSV) (if Region requests)				
Method Blank Summary (Form IV LCSV)				
GC/MS Instrument Performance Check (Form V LCSV)				
Internal Standard Area and RT Summary (Form VIII LCSV)				
b. Sample Data				
TCL Results - (Form I LCSV-1, LCSV-2)				
Tentatively Identified Compounds (Form I LCSV-TIC)				
Reconstructed Total Ion Chromatograms (RIC) for each sample				
For each sample:				
Raw Spectra and background-subtracted mass spectra of target compounds				
Quantitation reports				
Mass Spectra of TICs with three best library matches				
c. Standards Data (All Instruments)				
Initial Calibration Data (Form VI LCSV-1, LCSV-2, LCSV-3)				
RICs and Quantitation Reports for all Standards				
Continuing Calibration Data (Form VII LCSV-1, LCSV-2, LCSV-3)				
RICs and Quantitation Reports for all Standards				
d. Raw QC Data				
DFTPP				
Blank Data				
Matrix Spike/Matrix Spike Duplicate Data (if Region requests)				
6. **Pesticides Data**				
a. QC Summary				
Surrogate Percent Recovery Summary (Form II LCP)				
MS/MSD Duplicate Summary (Form III LCP-1) (if Region requests)				
Laboratory Control Sample Recovery (Form III LCP-2)				
Method Blank Summary (Form IV LCP)				
b. Sample Data				
TCL Results - Organic Analysis Data Sheet (Form I LCP)				
Chromatograms (Primary Column)				
Chromatograms from second GC column confirmation				
GC Integration report or data system printout				
Manual work sheets				

LOW CONCENTRATION WATER ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET (Con't)

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____
_____ _____ CLIENT NO. _____

	PAGE NOs FROM	TO	CHECK LAB	EPA
6. **Pesticides Data** (Con't)				
c. Standards Data				
Initial Calibration of Single Component Analytes (Form VI LCP-1 and LCP-2)				
Initial Calibration of Multicomponent Analytes (Form VI LCP-3)				
Analyte Resolution Summary (Form VI LCP-4)				
Performance Evaluation Mixture (Form VI LCP-5)				
Individual Standard Mixture A (Form VI LCP-6)				
Individual Standard Mixture B (Form VI LCP-7)				
Calibration Verification Summary (Form VII LCP-1)				
Calibration Verification Summary (Form VII LCP-2)				
Analytical Sequence (Form VIII LCP)				
Florisil Cartridge Check (Form IX LCP)				
Pesticide Identification Summary for Single Component Analytes (Form X LCP-1)				
Pesticide Identification Summary for Multicomponent Analytes (Form X LCP-2)				
Chromatograms and data system printouts				
A printout of retention times and corresponding peak areas or peak heights				
d. Raw QC Data				
Blank Data				
Matrix Spike/Matrix Spike Duplicate Data (if Region requests)				
Laboratory Control Sample Data				
e. Raw Florisil Data				
7. **Miscellaneous Data**				
Original preparation and analysis forms or copies of preparation and analysis logbook pages				
Internal sample and sample extract transfer chain-of-custody records				
Screening records				
All instrument output, including strip charts from screening activities (describe or list)				
_____				
_____				

LOW CONCENTRATION WATER ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET (Con't)

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____
_____ _____ CLIENT NO. _____

	PAGE NOs FROM	TO	CHECK LAB	EPA
8. **EPA Shipping/Receiving Documents**				
Airbills (No. of shipments _____)				
Chain-of-Custody Records				
Sample Tags				
Sample Log-in Sheet (Lab & DC1)				
Miscellaneous Shipping/Receiving Records (describe or list)				
_____				
_____				
9. **Internal Lab Sample Transfer Records and Tracking Sheets**				
(describe or list)				
_____				
_____				
10. **Other Records**				
(describe or list)				
Telephone Communication Log				
_____				
_____				

11. **Comments**: _____

_____

_____

Completed by: (CLP Lab) _____ (Signature) _____ (Printed Name/Title) _____ (Date)

Verified by: (CLP Lab) _____ (Signature) _____ (Printed Name/Title)

Audited by: (EPA) _____ (Signature) _____ (Printed Name/Title) _____ (Date)

EXHIBIT C

TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

NOTE: Specific quantitation limits are highly matrix-dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

The CRQL values listed on the following pages are based on the analysis of samples according to the specifications given in Exhibit D.

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Exhibit C - Target Compound List and Contract Required Quantitation Limits

Table of Contents

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1.0 VOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

	Volatiles	CAS Number	Quantitation Limits Water µg/L
1.	Dichlorodifluoromethane	75-71-8	0.50
2.	Chloromethane	74-87-3	0.50
3.	Vinyl Chloride	75-01-4	0.50
4.	Bromomethane	74-83-9	0.50
5.	Chloroethane	75-00-3	0.50
6.	Trichlorofluoromethane	75-69-4	0.50
7.	1,1-Dichloroethene	75-35-4	0.50
8.	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.50
9.	Acetone	67-64-1	5.0
10.	Carbon Disulfide	75-15-0	0.50
11.	Methyl Acetate	79-20-9	0.50
12.	Methylene Chloride	75-09-2	0.50
13.	trans-1,2-Dichloroethene	156-60-5	0.50
14.	Methyl tert-Butyl Ether	1634-04-4	0.50
15.	1,1-Dichloroethane	75-34-3	0.50
16.	cis-1,2-Dichloroethene	156-59-2	0.50
17.	2-Butanone	78-93-3	5.0
18.	Bromochloromethane	74-97-5	0.50
19.	Chloroform	67-66-3	0.50
20.	1,1,1-Trichloroethane	71-55-6	0.50
21.	Cyclohexane	110-82-7	0.50
22.	Carbon Tetrachloride	56-23-5	0.50
23.	Benzene	71-43-2	0.50
24.	1,2-Dichloroethane	107-06-2	0.50
25.	Trichloroethene	79-01-6	0.50
26.	Methylcyclohexane	108-87-2	0.50
27.	1,2-Dichloropropane	78-87-5	0.50
28.	Bromodichloromethane	75-27-4	0.50
29.	cis-1,3-Dichloropropene	10061-01-5	0.50
30.	4-Methyl-2-pentanone	108-10-1	5.0
31.	Toluene	108-88-3	0.50
32.	trans-1,3-Dichloropropene	10061-02-6	0.50
33.	1,1,2-Trichloroethane	79-00-5	0.50
34.	Tetrachloroethene	127-18-4	0.50
35.	2-Hexanone	591-78-6	5.0
36.	Dibromochloromethane	124-48-1	0.50
37.	1,2-Dibromoethane	106-93-4	0.50
38.	Chlorobenzene	108-90-7	0.50

1.0 VOLATILE TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (Con't)

	Volatiles	CAS Number	Quantitation Limits Water µg/L
39.	Ethylbenzene	100-41-4	0.50
40.	Xylenes (total)	1330-20-7	0.50
41.	Styrene	100-42-5	0.50
42.	Bromoform	75-25-2	0.50
43.	Isopropylbenzene	98-82-8	0.50
44.	1,1,2,2-Tetrachloroethane	79-34-5	0.50
45.	1,3-Dichlorobenzene	541-73-1	0.50
46.	1,4-Dichlorobenzene	106-46-7	0.50
47.	1,2-Dichlorobenzene	95-50-1	0.50
48.	1,2-Dibromo-3-chloropropane	96-12-8	0.50
49.	1,2,4-Trichlorobenzene	120-82-1	0.50
50.	1,2,3-Trichlorobenzene	87-61-6	0.50

2.0 SEMIVOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

	Semivolatiles	CAS Number	Quantitation Limits Water :g/L
51.	Benzaldehyde	100-52-7	5.0
52.	Phenol	108-95-2	5.0
53.	bis-(2-Chloroethyl)ether	111-44-4	5.0
54.	2-Chlorophenol	95-57-8	5.0
55.	2-Methylphenol	95-48-7	5.0
56.	2,2'-oxybis(1-Chloropropane)[1]	108-60-1	5.0
57.	Acetophenone	98-86-2	5.0
58.	4-Methylphenol	106-44-5	5.0
59.	N-Nitroso-di-n-propylamine	621-64-7	5.0
60.	Hexachloroethane	67-72-1	5.0
61.	Nitrobenzene	98-95-3	5.0
62.	Isophorone	78-59-1	5.0
63.	2-Nitrophenol	88-75-5	5.0
64.	2,4-Dimethylphenol	105-67-9	5.0
65.	bis(2-Chloroethoxy)methane	111-91-1	5.0
66.	2,4-Dichlorophenol	120-83-2	5.0
67.	Naphthalene	91-20-3	5.0
68.	4-Chloroaniline	106-47-8	5.0
69.	Hexachlorobutadiene	87-68-3	5.0
70.	Caprolactam	105-60-2	5.0
71.	4-Chloro-3-methylphenol	59-50-7	5.0
72.	2-Methylnaphthalene	91-57-6	5.0
73.	Hexachlorocyclopentadiene	77-47-4	5.0
74.	2,4,6-Trichlorophenol	88-06-2	5.0
75.	2,4,5-Trichlorophenol	95-95-4	20
76.	1,1'-Biphenyl	92-52-4	5.0
77.	2-Chloronaphthalene	91-58-7	5.0
78.	2-Nitroaniline	88-74-4	20
79.	Dimethylphthalate	131-11-3	5.0
80.	2,6-Dinitrotoluene	606-20-2	5.0
81.	Acenaphthylene	208-96-8	5.0
82.	3-Nitroaniline	99-09-2	20
83.	Acenaphthene	83-32-9	5.0
84.	2,4-Dinitrophenol	51-28-5	20

[1]Previously known by the name bis(2-Chloroisopropyl)ether.

2.0 SEMIVOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (Con't)

	Semivolatiles	CAS Number	Quantitation Limits Water :g/L
85.	4-Nitrophenol	100-02-7	20
86.	Dibenzofuran	132-64-9	5.0
87.	2,4-Dinitrotoluene	121-14-2	5.0
88.	Diethylphthalate	84-66-2	5.0
89.	Fluorene	86-73-7	5.0
90.	4-Chlorophenyl-phenylether	7005-72-3	5.0
91.	4-Nitroaniline	100-01-6	20
92.	4,6-Dinitro-2-methylphenol	534-52-1	20
93.	N-Nitrosodiphenylamine	86-30-6	5.0
94.	1,2,4,5 Tetrachlorobenzene	95-94-3	5.0
95.	4-Bromophenyl-phenylether	101-55-3	5.0
96.	Hexachlorobenzene	118-74-1	5.0
97.	Atrazine	1912-24-9	5.0
98.	Pentachlorophenol	87-86-5	5.0
99.	Phenanthrene	85-01-8	5.0
100.	Anthracene	120-12-7	5.0
101.	Di-n-butylphthalate	84-74-2	5.0
102.	Fluoranthene	206-44-0	5.0
103.	Pyrene	129-00-0	5.0
104.	Butylbenzylphthalate	85-68-7	5.0
105.	3,3'-Dichlorobenzidine	91-94-1	5.0
106.	Benzo(a)anthracene	56-55-3	5.0
107.	Chrysene	218-01-9	5.0
108.	bis(2-Ethylhexyl)phthalate	117-81-7	5.0
109.	Di-n-octylphthalate	117-84-0	5.0
110.	Benzo(b)fluoranthene	205-99-2	5.0
111.	Benzo(k)fluoranthene	207-08-9	5.0
112.	Benzo(a)pyrene	50-32-8	5.0
113.	Indeno(1,2,3-cd)pyrene	193-39-5	5.0
114.	Dibenzo(a,h)anthracene	53-70-3	5.0
115.	Benzo(g,h,i)perylene	191-24-2	5.0

3.0 PESTICIDES/AROCLORS TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

	Pesticides/Aroclors	CAS Number	Quantitation Limits Water :g/L
116.	alpha-BHC	319-84-6	0.01
117.	beta-BHC	319-85-7	0.01
118.	delta-BHC	319-86-8	0.01
119.	gamma-BHC (Lindane)	58-89-9	0.01
120.	Heptachlor	76-44-8	0.01
121.	Aldrin	309-00-2	0.01
122.	Heptachlor epoxide[2]	1024-57-3	0.01
123.	Endosulfan I	959-98-8	0.01
124.	Dieldrin	60-57-1	0.02
125.	4,4'-DDE	72-55-9	0.02
126.	Endrin	72-20-8	0.02
127.	Endosulfan II	33213-65-9	0.02
128.	4,4'-DDD	72-54-8	0.02
129.	Endosulfan sulfate	1031-07-8	0.02
130.	4,4'-DDT	50-29-3	0.02
131.	Methoxychlor	72-43-5	0.10
132.	Endrin ketone	53494-70-5	0.02
133.	Endrin aldehyde	7421-93-4	0.02
134.	alpha-Chlordane	5103-71-9	0.01
135.	gamma-Chlordane	5103-74-2	0.01
136.	Toxaphene	8001-35-2	1.0
137.	Aroclor-1016	12674-11-2	0.20
138.	Aroclor-1221	11104-28-2	0.40
139.	Aroclor-1232	11141-16-5	0.20
140.	Aroclor-1242	53469-21-9	0.20
141.	Aroclor-1248	12672-29-6	0.20
142.	Aroclor-1254	11097-69-1	0.20
143.	Aroclor-1260	11096-82-5	0.20

[2]Only the exo-epoxy isomer (isomer B) of heptachlor epoxide is reported on the data reporting forms (Exhibit B).